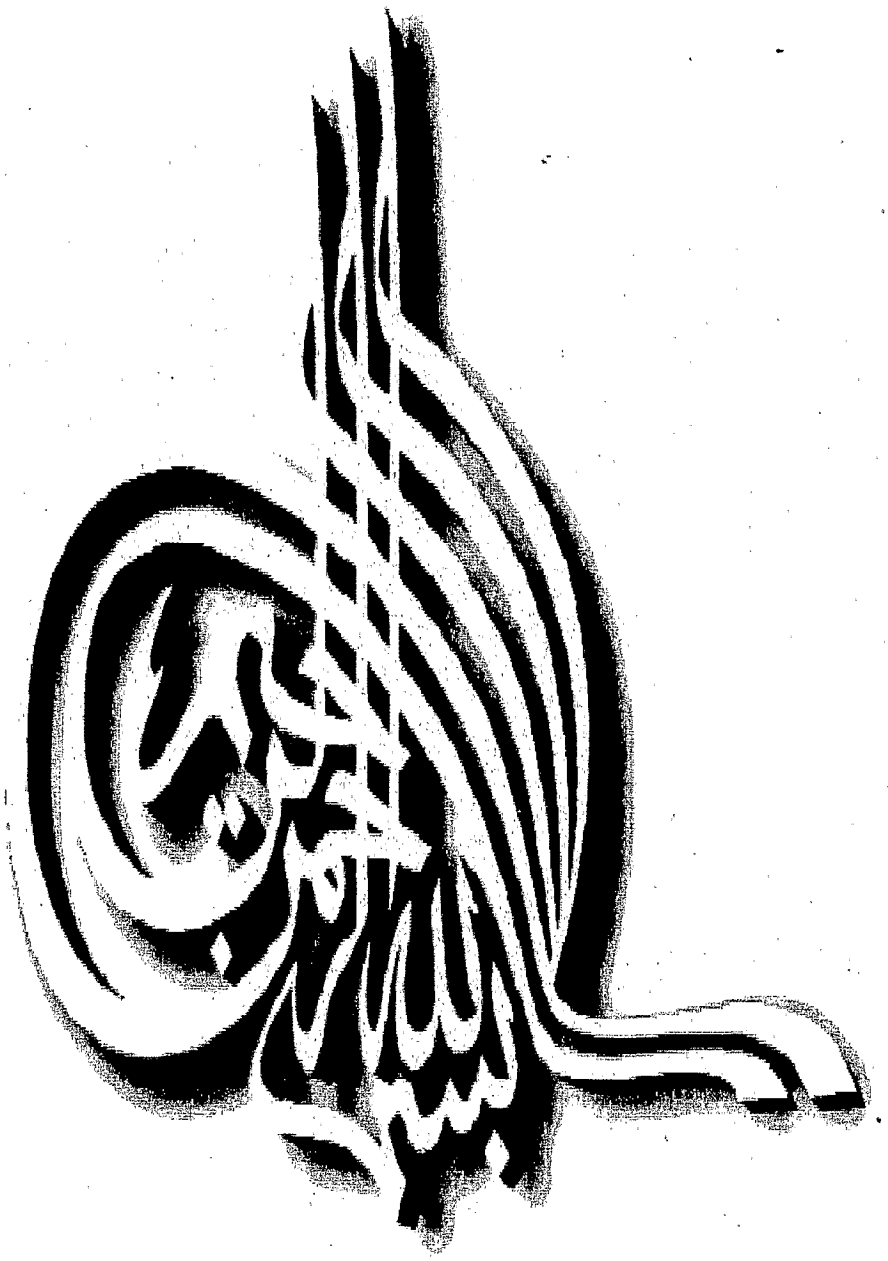

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MASTER'S THESIS

Measuring the Staff Technology Readiness

The Case of a Multi National Chemical Company operating in Iran

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این نسخه به عنوان نسخه نهایی پایان نامه/رساله مورد تأیید است.

امضای استاد راهنما:

ABSTRACT

Globalization and technology improvements have exposed companies to a situation with though competition in which they need to innovate and challenge conventional practices more than ever before, In fact the global uncertainty facing organization is greater than it has ever been and the need to share ideas and challenge within the corporate environment is a pre-requisite for survival, that is why a silent revolution is taking place in how technology is being leveraged inside the organizations to facilitate intra company communication, some of this is very obvious including wide spread use of information technologies such as expeditious data processing abilities, configurable platforms, networking, Internet, e-mail, fax, teleconferencing and so on. Information Technology researchers have studied these developments as innovations ~ ideas, processes, or objects new to a potential innovator or adaptor.

In this regard, the technology readiness construct refers to people's propensity to embrace and use new technologies for accomplishing goals in home life and at work. The construct can be viewed as an overall state of mind resulting from a gestalt of mental enablers and inhibitors that collectively determine a person's predisposition to use new technologies. (Parasuraman 2000)

The purpose of this study has been to investigate the technology readiness of staff of a multi national chemical company operating in Iran, the result reveled that the medium to higher level of staffs are quiet technology savvy though company has not yet implemented its integrated ERP system. Staffs have managed to well streamline their activities within the global network of the company with the help of Internet.

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Chapter 1
Introduction

Since IBM's announcement of the personal computer in 1983, an unprecedented number of new information technologies have been developed and deployed in industry. No facet of organizational life has been untouched; from the mail room to the board room, information technology facilitates work. Increasingly, organization boundaries blur as outsourcing becomes more common and the use of electronic communication networks support inter organizational document exchanges. Architectures relating to telecommunications technology, applications technology, and information technology support the onrushing information age. Each of these architectures has its own hardware, software, and organizational change potentials. Current examples of technological and organizational innovations include multimedia, object-oriented methods and languages, data administration, imaging systems and software, chief information officers (CIOs),

inter-organizational electronic data interchange (EDI) networks, and ERP systems, information technology (IT) researchers have studied these and many other developments as *innovations* ~ ideas, processes, or objects new to a potential innovator or adopter.

In fact IT is widely regarded as an enabler of organizational change (Hammer and Champy, 1993). And the effective utilization of IT for organizational change includes the successful adoption and introduction of IT solutions for changing organizational processes.

In this respect diffusion activities that facilitate appropriate IT deployment within an organization include those associated with adaptation, which consists of IT development and installation, design and implementation of organizational procedures, and the training of organizational members (Klein & Sorra, 1996; Cooper & Zmud, 1990).

As illustrated at the top of the below Figure, prior to adaptation, an IT has been identified as a solution to an organizational problem and a decision has been made to bring this solution into existence (initiation and adoption at the organizational level). After adaptation, organizational effort is employed to get organizational members to use the IT (acceptance or adoption at the individual level) so that it becomes a routine part of organizational work (routinization).

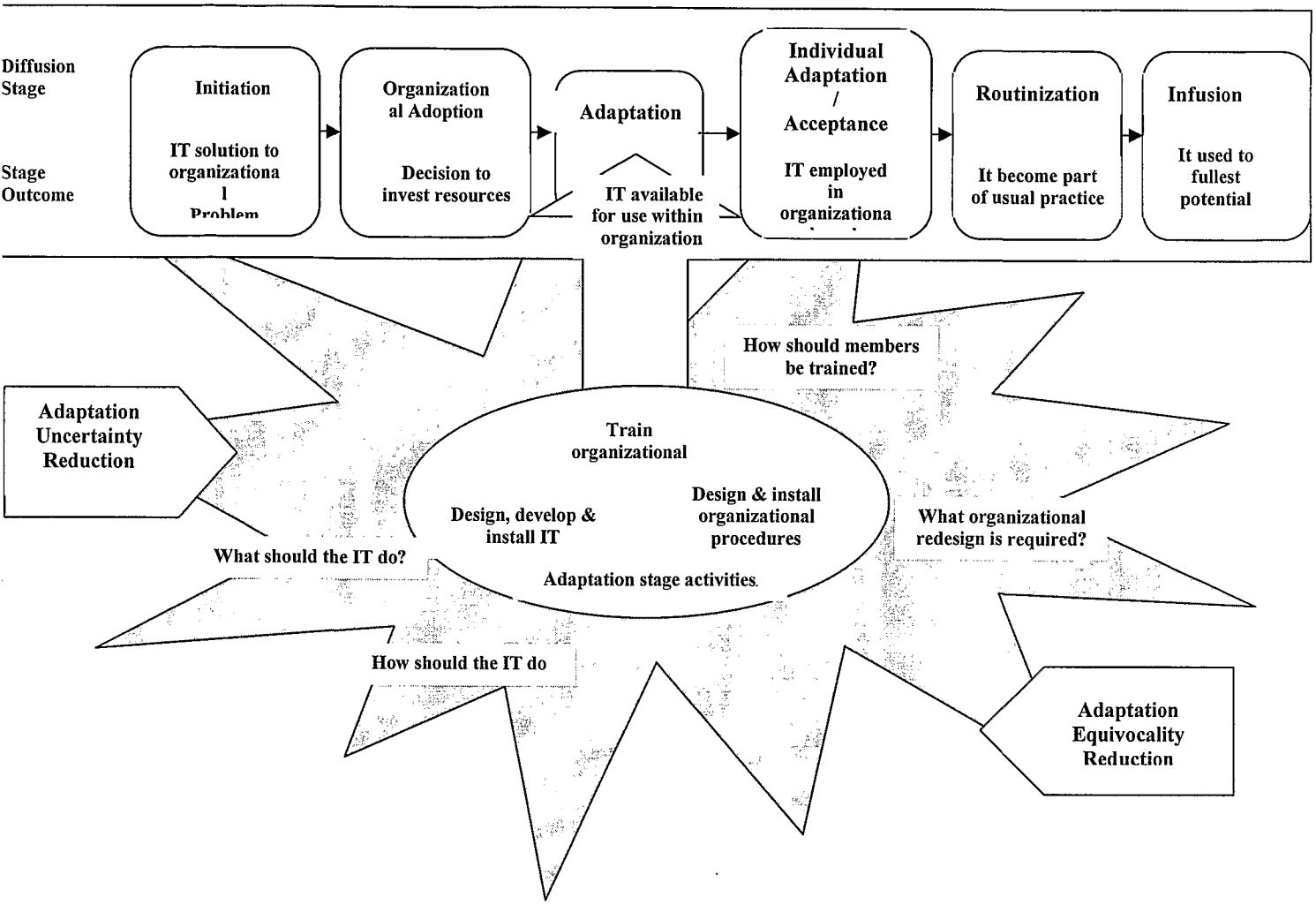

Figure 1: Cooper & Zmud (1990) Model

(*Shaded Area represents uncertainty & equivocality regarding adaptation stage activities. Oval represents uncertainty & equivocality threshold required to complete adaptation stage activities.)

Additional organizational effort may also be employed in order to find ways and means to use the IT to its fullest potential (infusion). Effective adaptation of organizational IT (i.e., IT that cross functional boundaries) requires appropriate interaction among IT staff and potential IT users. The innovation diffusion literature

suggests that information processing is important in this interaction, indicating that intra-organizational innovation diffusion is in large part a process of information seeking and/or processing (Agarwal & Prasad, 1998; Brancheau & Wetherbe, 1990; Rogers 1995). For example, information processing is employed to develop attitudes that are supportive of particular innovations by facilitating the transfer, dissemination, and promotion of compatible norms, values and expectations (Dewett, 2001; Hargadon & Douglas, 2001), to achieve necessary skill, role, and process modification (Nault et al., 1997; Tornatzky & Fleischer, 1990), and to attain the cross-functional collaboration often needed to achieve necessary organizational and IT adjustments (Galbraith, 1994; Rogers, 1995; Van de Ven, 1986). As argued by Orlikowski (2000), people modify technologies and their conceptions of technology with 'stabilization' being achieved through processes of negotiation, persuasion, and debate.

In general, information seeking and processing during adaptation are aimed at the reduction of uncertainty and equivocality, because early in adaptation it is often unclear what the IT is to do, how it is to do it, what organizational (re)design will be required, and how to train members (see shaded component of Figure). These issues must be resolved (i.e., equivocality and uncertainty must be reduced) in order to appropriately develop and install the IT as well as to design and install appropriate organizational policies and procedures and train organizational members,

Also employees can be reluctant to accept and integrate technology into their work lives, especially when they perceive, rightly or wrongly, that the technology will substitute for human labor and perhaps eliminate their job. Even when this is not the case, employees are often reluctant to embrace technology simply because they do not want to change or do not see the value in learning the new technology.

1.1 Technology Readiness

The technology-readiness construct refers to *people's propensity to embrace and use new technologies for accomplishing goals in home life and at work.* The construct can be viewed as an overall state of mind resulting from a gestalt of mental enablers and

inhibitors that collectively determine a person's predisposition to use new technologies. (Parasuraman 2000)

Research on the determinants and consequences of adopting new technologies has gone on for decades. The area of telecommunications is a case in point. Scholars started studying telecommunications affect on and implications for society more than a quarter century ago, when the field was in its infancy relative to what it is today (Short,Williams, and Christie 1976). However, new technologies are now proliferating through various facets of every day life at a much faster rate than ever before. For instance, whereas the automobile took 55 years to achieve 25% ownership among the population, cellular telephones took only 13 years to reach the same level of ownership (Berry 1999). Ironically, although new technologies have been penetrating the population at increasing rates, ample anecdotal as well as survey-based evidence suggests signs of growing consumer frustration and disillusionment (e.g., Alsop 1999; Mossberg 1999). Consider PCs. According to an Arbitron New Media survey of 5,500 U.S. households, although home penetration of PCs increased from 29% to 54% between 1995 and 1999, the percentage of adult consumers (ages 16 to 74) who said they were using their home PCs declined from 90% to 53% during the same period ("PC Usage in Homes" 1999). A plausible explanation for the inverse relationship between penetration and use rates is that more recent adopters of new technologies may not be as technology savvy as are early adopters and, therefore, may not be avid users. Another plausible reason is product complexity coupled with a lack of user-friendly instructions and support service. According to Robert Mc-Conochie, Arbitron NewMedias research director, the patience factor is wearing thin (PC Usage in Homes 1999).

1.2. Background

If we look back just ten to 15 years, we see how technology has been the basic force behind service innovations we now take for granted. Automated voice mail, interactive voice response systems, FAX machines, ATMs, and other commonplace

services which were only possible because of new technologies. Just think how dramatically different our world would be without these basic technology services.

More recently, we have seen the explosion of the Internet, resulting in a host of new services. Internet-based companies like Amazon.com and E-Bay offer services previously unheard of. And established companies find that the Internet provides a way to offer new services as well (Willcocks, 2001). For example, Dow Jones, the publisher of The Wall Street Journal, offers an Interactive Edition, allowing customers to organize the newspaper's content to suit their individual preferences and needs.

MeritaNordbanken, in Scandinavia, found it could be successful in introducing an Internet-based bill-paying service for its customers, helping them efficiently accomplish a necessary task that most customers disliked doing.

As we look forward, many new technology services are on the horizon. For example, some project that the ``connected car'' will allow people to access all kinds of existing and new services while on the road. Already many cars are equipped with map and routing software that direct drivers to specific locations. In the future, in-car systems may provide recommendations for shopping by informing drivers when they are within a certain number of miles of their preferred retailer. On a road trip, the system may provide weather forecasts and warnings and, when it is time to stop for the night, the car's system could book a room at a nearby hotel and recommend a restaurant and make reservations for dinner.

The mobile Internet is also likely to result in new service offerings. Small screens and clumsy controls mean that cell-phone access to the Internet is less desirable than other points of access. However, accessing the Web via cell phones is certainly a possibility today and, in fact; it is a reality in many countries in Europe and in Japan, where cell phone usage is greater than in the USA. In Finland, for example, consumers can charge vending machine and gasoline purchases through their cell phones. And, in Europe and Japan, marketers are experimenting with some success in delivering advertising messages via cell phones.

In addition to providing opportunities for new service offerings, technology is providing vehicles for delivering existing services in more accessible, convenient and productive ways. Technology facilitates basic customer service functions (bill paying, questions, checking account records, tracking orders), transactions (both retail and business-to- business), and learning or information seeking.

In the financial services field, Charles Schwab transformed itself from a traditional broker to an online financial services company that currently conducts more than two-thirds of its customer transactions online.

GEPolymerland is General Electric's successful B-to-B online resins marketplace.

A significant percentage of all of GE's resin sales are handled through the site and almost all of those online orders go directly into the information-management system without human intervention. And technology giant, Cisco Systems, virtually offers all of its customer service and ordering functions to its business customers via technology. Over 90 percent of its transactions with customers are completed online.

Technology has changed the face of customer service forever. We have moved from face-to-face service, to telephone-based service to widespread use of interactive voice response systems, to Internet-based customer service and now wireless.

For employees, technology can provide tremendous support in making them more effective and efficient in delivering service. Customer relationship management and sales support software are broad categories of technology that can aid front-line employees in providing better service. By having immediate access to information about their product and service offerings as well as about particular customers, employees are better able to serve them. This type of information allows employees to customize services to fit the customer's needs. They can also be much more efficient and timely than in the old days, when most customer and product information was in paper files or in the heads of sales and customer service representatives.

Technology infusion results in the potential for reaching out to customers around the globe in ways not possible before. The Internet itself knows no boundaries and therefore information, customer service and transactions can occur across countries and across continents, reaching any customer who has access to the Web. Technology also allows employees of international companies to stay in touch with each other to easily share the information, to ask questions, and to serve on virtual teams together. All of this facilitates the global reach as well as the effectiveness of service businesses.

An interesting way to look at the influence of technology is to realize that the Internet IS just ``one big service". All businesses and organizations that operate on the Internet are essentially providing services, whether they are providing information, performing basic customer service functions, or facilitating transactions. The tools, concepts and strategies in the field of services marketing and management have direct applications in an Internet or e-business world.

Of course Rust (1998) argues, all products are really services, and "most goods businesses now view themselves primarily as services, with the offered good being an important part of the service (rather than the service being an augmentation of the physical good)" (p. 107). In a similar vein, Bitner, Brown, and Meuter (2000), emphasizing the fact that virtually all firms compete on the basis of customer service and service offerings, propose an expanded conceptualization of services that transcends industry boundaries.

So it is obvious that in this area of service based competition, Technology is dramatically and profoundly changing the nature of services (Zeithaml and Bitner, 2000). It is resulting in tremendous potential for new services offerings, offerings not imaginable even a decade ago.

Technology is dramatically changing how services are delivered, and it is enabling both customers and employees to get and provide better, more efficient customized services. Technology facilitates the global reach of services that historically

were tied to their home locations. In fact some would say that Internet, the king of current technologies, is "one big service" vehicle.

In fact companies' use of technology in selling to and serving customers is growing at a fast pace. Likewise, customers are dealing with products and services that are becoming increasingly sophisticated from a technological standpoint.

As such, the nature of company-customer interactions is undergoing fundamental transformations with far-reaching implications for both companies and customers.

For instance, a major consequence of technology's growing role is a commensurate growth in self-service technologies that call for customers to interact with technology-based systems rather than company personnel (Bitner, Brown, and Meuter 2000; Dabholkar 2000; Meuter et al. 2000).

Technology enables both customers and employees to be more effective in getting and providing service (Bitner et al., 2000). Through ``self-service technologies" customers are able to serve themselves more effectively. For example, through online banking, customers can access their accounts, check balances, apply for loans, shift money among accounts, and take care of just about any banking need they might have all on their own and in their own time frame without the assistance of the bank's employees. Wells Fargo, the first bank to offer online services in the USA, finds that its online customers are its most satisfied customers. These types of services are called ``self-service technologies" and they are proliferating across industries.

To highlight the implications of technology induced shifts in the nature of customer-company interactions, Parasuraman (1996) proposed a pyramid model of services marketing. The pyramid model is an extension of the triangle model of services marketing, proposed by Kotler (1994) to capture the added complexities of marketing services relative to marketing goods, and is consistent with some of the ideas discussed by Grönroos (1996, 1998). The triangle and pyramid models are shown in Figure 1.

The triangle model underscores the notion that although the marketing of goods occurs primarily in the form of *external marketing*—activities pertaining to the traditional 4 Ps (product, price, promotion, and place or distribution)—the effective marketing of services requires extra emphasis on two additional forms of marketing: *internal* and *interactive*. Internal marketing is a concept that has been discussed in the services literature for many years (see, for example, Berry 1981). It deals with treating service personnel as internal customers and providing them with appropriate training, support, motivation, and rewards to serve external customers well. Interactive marketing deals with making a good impression on customers during their encounters with service employees.

Both internal and interactive marketing are consistent with the recommendations of Booms and Bitner (1981) who proposed an expanded marketing mix for services by adding three new Ps—people, process, and physical environment to the traditional 4 Ps. However, these two types of marketing still do not explicitly consider the impact of technology. Because of the rapid infusion of technology into the process through which products and services are purchased and consumed, the triangle model does not completely capture the current complexities of services marketing. To reflect these complexities, the pyramid model incorporates technology as a new dimension into the two-dimensional triangle model and highlights three new links that need to be managed well to maximize marketing effectiveness: company-technology, technology-employee, and technology-customer (Parasuraman 1996).

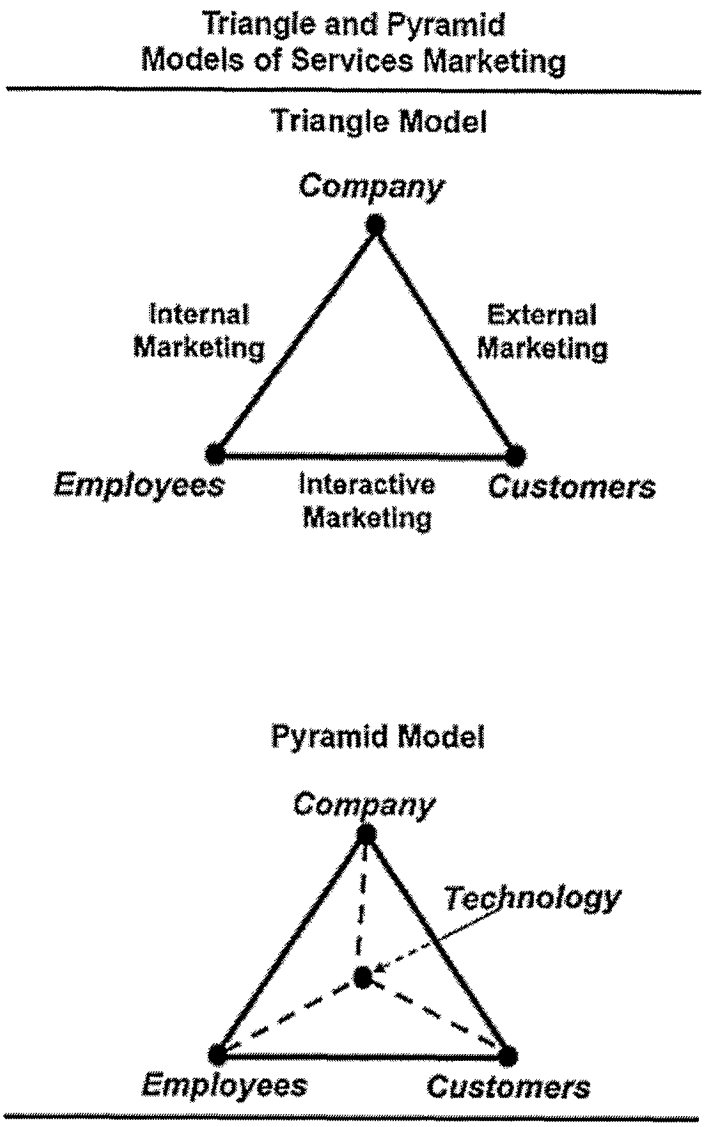

Figure 2: Triangle and Pyramid Models of Services Marketing
(Adapted from Parasuraman, 2000)

In fact a silent revolution is taking place in how technology is being leveraged inside the marketing organization to facilitate intra company communication and *internal marketing.* Some of this is very obvious, including the widespread use of information technologies such as e-mail, fax, and teleconferencing. Indeed, technology is driving some fundamental changes inside corporations:

* More and more companies are using real-time budgeting software to continuously fine-tune resources to adapt to changes in their markets.