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## Cybernization management in the cyber world: a new management perspective

### Abstract

This paper is a part of a long-term research effort, the ultimate objective of which is to offer the ways to integrate computer-based technology (CBT) including information and communication technology (ICT) and inter- and intra-organizational functions and relationships from a holistic e.Total Relationship Management perspective embedding the physical and cyber worlds.

It is a conceptual study based on the recent developments of ICT, inter-firm relationship management: economic (transaction costs economics), socio-psychological (social exchange, inter-organization, and industrial network).

A new concept and model of Cybernization Management have been developed and discussed. Some general propositions are presented and some synergy effects of utilizing the e.TRM are highlighted. The paper suggests how these approaches can add an impetus to successful management issues as a powerful competitive weapon in connecting the physical world with the cyber space.

The area of cybernization of an organization is so vast that it is impossible to get to the desired level of detail regarding every aspect of the same even at a conceptual level. There is a need to operationalize the new developed concepts. It is hoped, however, that the model and the ideas presented here will serve as a useful starting point for several related discussions and research.

This paper provides a model for Cybernity that accommodates the major manifestations of cybernization of an organization and could potentially provide the means to link diverse literature that is available in this area. It does so by proposing that it is important to recognize the direction and corner stones of cybernity. It highlights the need to delineate the operational and tactical issues relating to cybernity from the strategic use of cyberspace.

**Keywords:** cybernization, cyber world, physical world, Total Relationship Management (TRM), psychology, Human-Computer Interaction (HCI), technologicalship, management, relationship, marketing, organization, technology, IT.

**JEL Classification:** O.

### The only certainty is change

In our modern cyber world this is done by augmenting innate human knowledge handling capabilities with computer-based technology (CBT). Limiting ourselves to paper, pencil, typewriters, filing cabinets, manual archives, shelving systems, face-to-face meetings, stationary telephone conversation, fax machines, postal services, etc. is hardly a recipe for the twenty-first century.

We have to admit that technology has changed and is still changing our organizations, our way of thinking, our behavior, attitudes, life style and type of relations. In short, the ICT, CBT and other nanotechnologies are the latest paradigm shift which has shafted the entire way of our minds and lives. Here are some examples:

- ◆ we search all kinds of information online (e.information);
- ◆ we meet and chat with new people online (e.meeting/smart meetings);
- ◆ we buy, market and sell everything online (e.shop, e.Bay, e.marketing);
- ◆ we search and apply for conferences online, we even attend conferences online (e.conferences);

- ◆ we find our soul mates and dating online (e.marriage and dating);
- ◆ we even do sex online (e. or cybersex; *sounds bitter but truth;*)
- ◆ we manage and govern our organizations and even nations virtually (e.governorate);
- ◆ even most crimes are committed online, money laundry, pornography, terrorist activities, etc. (e.crimes);
- ◆ our minds have been laundered/washed everyday by e. media (e.brain laundering).

Can you imagine anything without e.? Nowadays we can not imagine anything without e. and/or @. So we have to cyber everything.

All such everyday life cyber activities, communication, and relationships require a new mindset. That new mindset needs to look at the cyber world from a holistic perspective. It needs @ and e.Total relationship management approach.

A company that does not learn and adapt to changing technology can face painful competition and may fall a victim to competitors that switched their strategies to the more technologically-based relationships. Douglas C. North (1993), one of the Nobel Prize winners in the economic sciences, argues that learning from each other, from past experience,

and from new innovations, enables organizations to find a common, probably unexpected, pattern or network of relationships that works for them. Such learning leads to emergent strategies.

## Introduction

Although the relationship marketing or management (RM) literature is rich, several significant gaps have emerged that are chiefly triggered by the recent evolution of organizational networks, e-business and e-commerce. These gaps appear to be widening with the introduction of electronic media networks (EMN) by many organizations which have led to e-business and commerce. There is some debate over whether RM is a new phenomenon or merely a development from transaction marketing (TM) that recognizes the need for organizations to retain clients and grow their share of customer base. The development of online commerce has also given a new impetus to research on RM, total relationship management (TRM) and customer relationship management (CRM) systems and procedures. The modern CRM concepts were shaped and influenced by the theories of total quality management, (TRM) and by other new technological paradigms (Starkey et al., 2002; Zineldin, 2000; Stone et al., 1996).

There is, however, a perceived lack of clarity in the definitions and functions of RM and CRM, although all accepted definitions are sharing approximately the same basic concepts: customer relationships, customer management, marketing strategy, customer retention, personalization (Starkey et al., 2002; Stone et al., 1996; Guráú, 2003; Woodcook, 2000; Zineldin, 2000). However, while academicians were debating the nuances of various definitions, the practitioners have developed a wealth of applicative papers analyzing the concrete challenges and opportunities of implementing TRM and e.CRM systems (Howard, 2001; Zineldin, 2000a).

One of the main constraints in leveraging the wealth of literature in these areas has been the incomplete or conflicting way of characterizing the organizations which are mostly electronically, not physically, connected with a network of web of different relationships (Starkey et al., 2002). Duncan and Moriarty (1998) proclaim that the RM literature chiefly focuses on elements such as trust and commitment and fails to pay proper attention to IT and communication as a critical ingredient that enhances relationships. It is through interactive communication that trust and commitment are built and developed among the interested parties. This issue has provided the initial impetus for this study. The gap within the RM literature is widened further by the apparent absence of investigations into the technological changes

which affect the facilitation of effective, two-way communication. Zineldin (2000) refers to the lack of the literature on the clarity over the meaning of relationship marketing and that is a new paradigm only when based on technological advances companies enabling their people, processes and policies to achieve CRM by the effective use of technology (Starkey et al., 2002).

The Internet has the potential to alter many aspects of current management and marketing theories and practice. But, most early research studies have focused on the role of the Internet as a promotional tool. More recently, case-based studies are beginning to emerge on how the Internet may alter the management process. There is a need to complement these studies with further research (Chaston and Mangles, 2003). Although the benefits and impacts of the internet fostered "e-transformation", "dis-intermediation", "reintermediation", and e-commerce have been widely discussed within the generic literature, a total integration and combination of the technology and total relationship management has received little attention. To that end, this paper provides a holistic perspective of technologization or cybernization of different organizational relationships.

This paper is a part of a long-term research effort, the ultimate objective of which is to offer the ways to integrate computer-based technology (CBT) including information and communication technology (ICT) and inter and intra-organizational functions and relationships from a holistic e.TRM paradigm embedding the physical and cyber worlds. It is a conceptual study based on the recent developments of ICT, inter-firm relations: economic (transaction costs economics), socio-psychological (social exchange; inter-organization; and industrial network) as well as relationship management and marketing theories and concepts with application in practice. It emphasizes the inherent a cybernization multidimensionalities of the organization and its various internal and external activities and relationships.

A new concept and a model of Cybernization have also been developed and discussed. Some general propositions are presented and some synergy effects of utilizing the e.TRM are highlighted. The paper suggests how these approaches can add impetus to successful management issues.

The paper is organized into five main sections. We will begin with outlining the conceptual background of RM, TRM and e.TRM and then pass to our preliminary modelling. This results in a conclusion, main finding and managerial implication.

## 1. Literature review

**1.1. From RM to TRM.** *1.1.1. Relationship marketing/management (RM).* Today's businesses are facing fierce and too aggressive competition while operating in both a domestic and a global market. This diverse and uncertain environment has forced organizations to restructure themselves in order to enhance their chances of survival and growth. The restructuring efforts have included, among others, the emergence of the "new paradigm" which is commonly referred to as relationship marketing, (RM) (e.g., Berry, 1983; Ford, 1990; Dwyer et al., 1987; Zineldin et al., 1997; Zineldin, 1998; Zineldin, 2000; Grönroos, 1994; Gummesson, 1999; McKenna, 1991; Morgan and Hunt, 1994; Webster and Frederick, 1992; Johanson and Matsson, 1988). RM has been used to reflect a number of different types of relational marketing activity.

The term of "relationship marketing" has appeared in the services marketing literature for the first time in a 1983 paper by Berry. According to Berry (1995), "relationship marketing is an old idea but a new focus now at the forefront of services marketing practice and academic research." Berry defined relationship marketing as "attracting, maintaining and enhancing the customer relationships in multi-service organizations context". Relationship marketing benefits the customer as well as the firm. Providing customer satisfaction, customers' loyalty and retention are the most long-term goals of relationship marketing. On the other hand, these types of consumer oriented goals also meet important needs for consumers such as risk reduction, trust building, maintaining cognitive consistency and simplifying decision making (Bitner, 1995; Sheth and Paravityar, 1995).

Since the "4 Ps" was launched in the 1960s, marketing has been transformed from a rather restricted and practical oriented set of models to an established research field resting on solid theoretical ground (Håkansson and Waluszewski, 2005). Some authors make strong statements that the concept of relationship marketing reflects a "new paradigm" in marketing thought and practice from 4 Ps to relationship marketing or 30 R (e.g., Gummesson, 1999; Grönroos, 1994). Brodie et al. (1997) state, however, that a paradigm shift implies that a "change has occurred, to one...whose world view replaces that of an existing world, and whose underlying assumptions replace those of an existing research mode".

Recognizing the potential contribution of recent technological advances, the relationship marketing (RM) literature places an emphasis on two-way communication as a key ingredient to enhancing relationships (Kapoulas et al., 2002). However, while most of the existing RM researches focus on

consumer markets, there is lack of studies on the role and impact of RM on industrial markets. In industrial markets, long lasting business relationships are regarded as beneficial. According to Zineldin (2000), companies seek ways "to develop formal, ongoing relations with customers in order to reach repeating transactions". For the development of enduring and mutual beneficial business relationships the following conditions are important: two or more individuals, groups or organizations are willing to be engaged and to interact in a relationship; each party must acquire something of value that the other party desires; there must be mutually rewarding connection in the relationship (Holma, 2004; Zineldin, 2000).

One important conclusion of Håkansson and Waluszewski's research is the need of development of new theoretical approaches of marketing mix tools. Therefore, Zineldin and Philipson (2007) conducted a theoretical and empirical research and found that there is no evidence that relationship marketing is a paradigm shift. RM is not a complete approach without utilization of CBT. The place of CBT in society is a major concern of many research groups and in particular the increasing role of computers in business and industry raises more and more human problems. The current research highlights what has been studied seriously in cybernetics for many decades and remains an important ongoing research endeavor (Ruddall, 1999).

*1.1.2. Total relationship management (TRM).* Being a client-oriented organization is important, but it is not necessarily enough to ensure success. Managers have to realize that the precisely right type of technology is the psychological and emotional atmosphere in which employees are encouraged to create, coordinate, and improve the entire business environment including those actions, interactions, mutual adaptation and flexibility that facilitate the emergence of a healthy network of relationships. This kind of totality determines the ultimate source of competitive advantage in dynamic physical and cyber worlds.

Successful organizations should be capable of more than the sum of their parts. To enable this to happen any organization needs to develop strong trust relationships between workers and managers, as well as between all people in an organization and the new IT systems. Organizations which develop e.TRM cultures that encourage contributions and which pool strengths can be described as "big mind" organizations. This means that they are able to see reality as extending beyond the bottom line.

A Total Relationship Management (TRM) approach and philosophy were created and developed by Zineldin (1998, 2000, 2000b). TRM is viewed as a

strategy and a philosophy as well. It is “total”, because it considers and coordinates ‘all’ activities including internal and external relationships, networks, interactions and co-operation as well as all activities involved in getting, keeping, enhancing and satisfying customers throughout quality. It is a strategy because it emphasizes maintaining high products/services, internal and external relationships quality, and trying to keep customers in the long run.

Holm (2006, p. 493) verified that TRM is a Philosophy by quoting the following:

*“Zineldin (2000) argues that total relationship management is a philosophy that emphasizes the communication of the organization’s overall thinking, as well as specific messages about its products, services or corporate identity”.*

The main goal of this totality approach of relationships is to produce and deliver products and services with an adequate level of functional and technical quality, just in time, adequate price, fast response delivery times, convenient distribution channels and, of course, to allow the organizations to realize the targeted shorts - and long-term profit and growth levels as well as to provide those organizations with a fair competitive edge.

Gupta et al. (2005, p. 397) refer to TRM by stating that:

*“Zineldin (2000) indicates that present day managers should ensure that every employee in all parts of the organization places top priority on continuous improvement of quality. Under Zineldin’s paradigm of total relationship management (TRM), the firm focuses on all integrated activities within the organization, including internal and external relationships with employees, other stakeholders and collaborators. Thus, the main philosophy behind this holistic approach to company relationships is to facilitate, create, develop, enhance, and continuously improve appropriate and advantageous internal and external relationships. It is therefore incumbent upon the leadership of the organization to inspire employees and hold them accountable for utilizing TRM as a tool to achieve a genuine TQS environment”.*

With some adaptation, the model of TRM will be useful for developing effective coordination. The main thrust of this all-inclusive approach is to facilitate, create, develop, enhance, and continuously improve appropriate internal and external relationships with customers, employees and collaborators. By utilizing TRM, internal audit can develop and promote a philosophy of coordination (Sharmain, 2005).

Zineldin (2000) argued that while the need for relationship development is important it is not complete without the use of technology. He refers to

this phenomenon as “technologicalship” marketing, which they regard as a symbiosis of technology and marketing which tends to enhance the relationship-building process. But there is still need to extend literature in this area as technological change tends to alter the role of the customer and the patterns of interaction with market communications and relations with service providers (Joseph et al., 2005).

## 2. e.Total Relationship Management (e.TRM)

The recent changes in the global market environment are pertinent to the many industries where changes have taken place leading to an environment that is characterized by deregulation, market saturation and harsh competition (Murphy, 1996). The increasingly competitive environment has led organizations to develop and utilize alternative delivery channels such as PC, Internet, Interactive TV and WAP, thus leading to the e-commerce and e.business phenomenon. Further, consumer behavior has changed. E-customers can now surf around competitive Web sites, evaluate their offerings and switch their accounts at the “press” of a button.

Many organizations have failed to recognize this need at present, relying heavily as they do on ICT and “lean” communication media with very little “social presence” (Kapoulas et al., 2002). Zineldin (2000) confirms the need to extend the literature in the area of technology and relationships: “... technological changes alter the role of the customer and patterns of market communications, relations, and interactions. When communication carries elements of interactivity, it enhances conversation and replaces company-to-customer communication with conversation (Deighton, 1997; Perry et al., 2002). Therefore, there is a pressing need to understand the sources and implication of this evolving form of linkages: how IT and interactivity transform markets” (Howcroft and Durkin, 2000).

Recently Zineldin (2000) has posited that recent advances in the application of IT to support more effective information interchange now mean that relationship marketing offers the most effective path through which firms can achieve a differential advantage over less technologically sophisticated, transactionally-orientated, competitors. This can occur because the low costs of information exchange using IT means that relationship-orientated firms are able to enjoy the benefits of having to spend significantly less money on promotional activities to sustain customer loyalty than their more transactionally-orientated counterparts (Chaston and Mangles, 2003).

One important trend in technology innovation and human resource management (HRM) is the development of professional service and customer relations management in rapidly transforming product

companies such as traditional electronic firms into service-centered ones (Lah et al., 2002; Heneman and Greenberger, 2002; Cunningham, 2004; Agrawal, 2004). Ekeledo and Sivakumar (2004) studied the impact of e-commerce on the entry mode choice of service firms and called for the re-conceptualization of marketing theories and concepts with services as a key component. Researchers recommended to incorporate technological factors into the entry-mode conceptual framework to account for the important role of technology in the marketing of services in today's e-commerce environment. More future research is expected to build up a strategic and holistic model of IT and human resource development so as to effectively integrate culture, organizational change and high-technology (Wang, 2005).

However, the problem of integrating ICT in building international business relationships has yet not been solved in a comprehensive and satisfactory way. Electronic relationships can be used as a powerful competitive weapon in establishing solid relationship with its different stakeholders. Unfortunately, many researchers view IT as a separate supporting element in developing relationships or as a facilitative relationship (Ford et al., 1998), but not as a core element that has an impact on every aspect of all types of organizations and human behavior.

It is very obvious that nowadays organizations and people will find it difficult to separate a relationship from information technology and other technological advances. Therefore, Mosad Zineldin (2000) has invented the terminology and management paradigm shift approach called "Technologicalship relationship", emphasizing the inseparability of modern technologies and all kinds of behavior, attitudes and relationships. A technologicalship partnership is a type of relationship which offers a natural linkage between the internal and external environment and the interaction process between them because it emphasizes how ICT, people and organizations are a function of win-win interaction.

Therefore, companies can no longer afford to maintain barriers between functions and departments (Pelton et al., 1997; Zineldin, 1998, 2006). IT can be used to remove or destroy such barriers. Managers have to stress the need of utilizing ICT for integrating related functions within the organization – production, sales and distribution, services, marketing, accounting, HRM, logistics, advertising, sales promotion, product planning and market research – to achieve the organization's business and marketing objectives. It is the manager's job to create, interpret, maintain, and enhance positive, sustainable and close relationships between the company and the customer. This philosophy can be referred to as @/e.Total Relationship Management (@TRM).

A key way to build a strong competitive position is through @TRM management (we refer to @TRM as total relationship management which is based on IT and the Internet), IT and "product/service quality and differentiation" which creates a clear image of the organization and its products/services in the eyes and minds of people and can lead to distinctive positioning in the global environment. Building barriers to competitive action can develop strong competitive positions by various means.

In addition, @TRM highlights the interrelationship between the efficiency and effectiveness, the productivity as well as the profitability of the organization's operations and activities. @TRM philosophy, if it results in greater people satisfaction (partners, employees, customers, investors and other stakeholders), is seen as a way of improving the profitability of the organization's operations.

**2.1. e.TRM and psychology.** One of the essential disciplines of the multidisciplinary fields of cybernetics, IT and systems is psychology. It plays its part in many major research topics. For example in the development of the human machine interface (HMI) or where the behavior of humans needs to be studied it becomes an important constituent of a project. In sociocybernetics, where the human in society is to be discussed, psychology can be an essential ingredient to any study (Ruddall, 1999; Joseph et al., 2005).

Human-computer interaction (HCI) is also one of the fastest-growing and most visible parts of IT and computer science (Carroll, 2003), and the private and public sectors are steadily becoming more committed to usability technology and engineering (Schneiderman and Plaisant, 2004). However, the increased use of HCI results happens at a time when we do not really know how HCI professionals conceptualize the field (Clemmensen, 2004, 2006).

A new strategy for solving the problems using ICT has been outlined in a publication from Compaq. The advice given is not concerned with the actual problem but rather with the way in which the IT user should approach its solution. Inevitably, therefore, it is the approach of the psychologist. The first impression of the Compaq approach using a psychologist is although more and more people become IT users, which leads to the need of the HCI approach development. Many users are not only untrained in their use of such facility but also have a mistaken belief in the capability of IT in solving their problems. This together with the wide ranging types of personalities of human beings will provide psychologists and ICT specialists with an ever increasing work load in the future. This "shortcoming of IT" has led many people

and workers to question whether they are more of a burden than an asset (Ruddall, 1999).

This means understanding and implementing things from a holistic and integrated approach like TRM, genuine teamwork, cross-organizational cooperation, customer orientation and the encouragement of creativity and innovation. By understanding the chains of logic which inform behavior we can then see what needs to be changed to remove the behavioral barriers to managing never-ending change.

The unprecedented pace of the technological change faced by organizations as they move into the second decades of the twenty-first century demands that managers must be aware that making inappropriate decisions about the presence in the cyber world and other technological dimensions may affect their competitive powers. It may also affect their profits by requiring expensive corrective actions. Success is the result of the symbiosis of technology, management and marketing (Zineldin, 1998). The partnering of ICT, TRM, marketing and management is the most important way to understand the future challenge of the cyber world. It is well known that the big changes that companies make ultimately fail because those companies do not properly understand the need for ICT and psychology changes in human behavior that underpin long term success.

Formulating an effective strategy for a firm is a complex task. Strategic and organizational requirements for HCI and person-system-organization fit are therefore becoming an important area of research for competitive advantage through deepening knowledge of technology and learning new technological skills and information (Lei and Slocum, 2005).

In general, to meet these new challenges from technology innovation a new holistic e.TRM and psychological approach is needed to integrate key strategies to achieve sustainable development through ICT.

**2.2. ICT, Internet and e.TRM.** In fact, there has been little research done on the ways in which technologically facilitated communication affects workers or management effectiveness (Wellman et al., 1996). Even differentiating between what is “social” and what is “technological” has proven a challenging task (Brigham and Corbett, 1997). The consequences of today’s technological advances are unplanned (Sproull and Kiesler, 1991). Vega and Brennan (2000) argue that a heavily use of technology can isolate people and make human disconnect.

How to best extract value from information technology (IT) resources is a major challenge facing both business and IT managers, particularly as they turn

their focus from searching for the competitive benefits of strategic information systems and striving for the benefits beyond process reengineering (Konsynski and McFarlan, 1990; Venktraman, 1997).

The advent of the computer has of course revolutionized just about every facet of social and business life, whilst the merging of telecommunications and computer technology is causing a fundamental reappraisal of a whole host of industries, with new ones springing up to replace those that do not keep abreast of changing technology (Blattberg and Deighton, 1991; Blattberg et al., 1994). Therefore the ICT and any other computer-based technology should be embedded in any relationship mix.

Computer-based technology (CBT) including ICT has dramatically changed the way knowledge work is done in organizations, releasing tremendous human resources, enabling organizational growth (and necessitating organizational restructuring), and facilitating improved performance (Holsapple, 2005). CBT is fundamentally concerned with digital approaches to representing and processing knowledge of various types and in various gradations. For descriptive knowledge the gradations – raw data to structured information to problem solutions for decisions – mirror the evolution of CBT from data processing systems to management information systems to decision support systems.

The Intranet serves as an easily accessible repository for corporate information; anything from strategic targets to health plans (Frost and Strauss, 1997). One of the most significant changes in ICT in recent years has been the emergence of Electronic Data Interchange (EDI). EDI is a system based on IT that links, for example, channel members for purposes of facilitating the flow of a product or service through the channel (Kahn and Mentzer, 1996). EDI can also be a ‘tie that binds’. EDI involves the paperless transmission of information exchange between manufacturers, suppliers, and retailers. These paperless transmissions include sales data, purchase orders, invoices, shipment tracking data, and product return information. Quick-response (QR) logistics and inventory systems use EDI applications to automatically replenish stock as it is sold. By operating on the real-time transmissions of sales and other logistics data between the channel parties operating at different levels in distribution systems, JIT eliminates the need for excess inventory.

e.business, which includes e.commerce and collaborative commerce, e.communities, e.dating and marriage, concerns approaches of achieving business goals in which technological means for representing and processing knowledge are used to implement,

e.Bay, facilitate, and enable the execution of activities within value chains and across value chains, as well as the decision making that underlies those activities (Holsapple, 2005; Holsapple and Singh, 2000).

e.business and one-to-one marketing marry the needs of enterprises and consumers with the ever-evolving cyber technology. The result: companies go electronic to communicate with each others and with their customers. Online marketing is also self-selective. It reaches consumers in literally every part of the world. Another benefit of online marketing is that it is interactive. The ability to easily navigate a Web site and its perceived value (e.g., entertainment, convenience, community) will influence both usage level and satisfaction. By extension, satisfaction in the online environment may also be driven by consumer benefits in using self-service technologies. Such benefits include useful information, convenience, saving time and money, avoiding interpersonal interaction, being in control, and ensure people (users) privacy and financial security (Van Riel et al., 2001; Reichheld and Schefer, 2000; Zineldin, 2000b; Zineldin, 2006; Bansal et al., 2004 ).

e.TRM also deals with online completeness, innovativeness, emotional appeal, complementary relationship, consistent image, contact interaction, care as well as e-loyalty. e.TRM can also be about how to utilize the Internet as a new technology and Web site satisfaction to be driven by ease of use and usefulness (e.g., site design, Web store functionality, ease of understanding, ease of navigation, easy to locate information, user friendly site, etc.). These two concepts are predominant in predicting how much consumers will be using computer technologies (Davis, 1989). Many studies suggest also a third driver, customer security (e.g., financial security, security/privacy), which reflects the Web site's information regarding its security policies.

### 3. Cyber Organizations (CO) and the inseparable nature of the cyber and physical space

In 1940, A. Azimov, started writing in his story "Robbie" about Robots to explore the ideas of how the synthetic mind "or machines" (ICT today) created to serve human beings, evolved and take over the world of men. His vision of 1940 is now true and not imagination any longer. Computers and technology already took over the mind of human beings.

Technology is constantly changing. We can not any longer assume that our current range of products will continue to be demanded by our lives or businesses. The advent of the CBT and ICT, of course, has revolutionized just about every facet of social, political and business life, whilst the merging of telecommunications and computer technology is causing a

fundamental reappraisal of a whole host of industries, with new ones springing up to replace those that do not keep abreast of changing technology.

However, it can fairly be said that management today faces a greater number of challenges of a more complex nature and from a wider number of sources. As shown in Figure 1, the cyber world requires new theory and moving from relationship management to e.total relationship management, e.TRM. Here, e.TRM should connect the physical world to the cyber world.

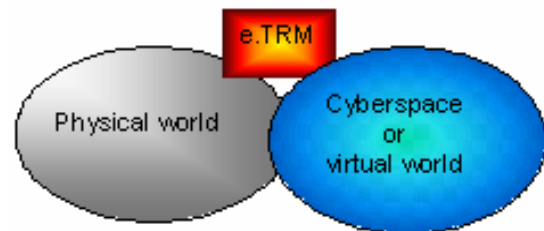


Fig. 1. Inseparable nature of cyber and physical spaces, e.TRM connecting physical and cyber worlds

Cyber organization (CO) is not a virtual organization (VO). Virtual organization has been defined by Byrne (1993) as "a temporary network of independent companies", by Goldman et al. (1995) as "an opportunistic alliance of core competencies" and as an "organization in which workers are not physically but electronically connected" (Fulk and Desanctis, 1995; Mowshowitz, 1997). VO is also defined as imaginary organization (IO) which exists in your mind. On the other hand, a Cyber Organization is any organization efficiently utilizing the ICT and other technologies to pool resources, communicate, facilitate, coordinate and integrate different business, political, social and financial activities in both physical world and cyberspace outside its boundary or environment to foster, improve and enhance relationships with its stakeholders.

e.TRM is about a systematic and efficient coordination and communication between, for example, an individual human's ability to process his own considerable tacit knowledge and a computer system's ability to process collectively constructed explicit knowledge. Organizations can use e.TRM to capture and reproduce tacit knowledge of their workers and partners, to be reused at different times, in different locations, through different media and cyber communication, to create business solutions more efficiently. This allows more time for individuals to use their intuitive strengths, defining and solving problems more creatively.

Finally, e.TRM is an unforgiving and very demanding process. One weak link and the whole effort can be wasted. If the stakeholders can be integrated into

the product/service development process, through cooperation and collaboration in real time, an intense relationship can begin.

#### 4. The integrated model

As mentioned above, one of the major problems of the academic studies related to RM and CRM systems, is the limited consideration of other factors that shape the holistic view of company's strategic possibilities. In many papers, the firm is presented as a separate organization, insulated from competitive market forces, having unlimited amounts of internal resources. Scholars and managers must begin to take IT more seriously (Glazer, 1991; Hoffman and Novak, 1997). Managers must be aware of the new developments in technology and its possible effects. How an organization uses, or does not use, technology is important for its long-term relationships and its long-run survival.

The existing models need therefore to be expanded in order to include the influence of market conditions, networks and other related factors. Therefore, this study tries to contribute to the existing literature and research by integrating all tools of cyber communications to the TRM approach. Hence, a conceptual model or e.TRM is discussed and developed.

Researchers have pointed to the concept of cyberspace being central to the understanding of virtual organizations (Shekhar, 2006). Virtuality is manifested through the level of dependence of an organization on cyberspace or its ICT infrastructure for completing its organizational activities. Hence a measure of the extent of this cybernity facilitation would be a measure of the degree of cybernity of an organization (Dube et al., 2005; Travica, 2005; Neuborne, 2003).

The use of cyberspace for movement of information is perhaps the most important identifier of any virtual relationship (Townsend et al., 2002; Katzy, 1998). For the purpose of this study, it therefore seems logical to use this commonly agreed parameter – “technology dependence” – as one of the most visible facets of a cyber organization (CO). CO is an organization that focuses and depends on information and communication technology (ICT).

ICT influences communication and coordination processes within a network with alliances and other collaborators. Technological advances and implementation can revolutionize an industry or destroy one. e.TRM managers have to look to the market space to create added-value. They have to integrate the activities of the physical world with those of the market space (virtual world) in order to create and extract value in the most efficient and effective

manner. We employ the term “technologicalship relationship” to show the inseparable nature and impact of ICT on all kinds of markets and relationships. Therefore, efficient e.TRM should tightly connect Physical and Cyber worlds.

This multidimensional and directional e.TRM relationship approach towards a holistic representation of possible intra- and inter-organizational linkages facilitated by technology should be supported by both practice and research.

#### 5. e.TRM and the potential technologicalship partners

The first step in our model representation is the identification of the directionality in studying cybernity, which could be along the each of the 9 identified different e.directions with the different partners or any combination of these. From the point of view of measurement, it is important to be able to measure cybernity independently along the nine directions. While this would enable a cumulative view of cybernity across the directions, it would also help to focus on a specific direction if required.

Through efficient e.technologicalship management, human resources and skills, and the use of the TRM mechanisms of mutual benefits, respect, confidence, trust, trusting behavior, commitment and adaptations, a company can establish, enhance and sustain ongoing business relationships with its different internal and external partners.

When creating and analyzing the relationship strategies, managers should consider nine primary candidates for such a technologicalship:

- ◆ workforce technologicalship management (WFM);
- ◆ employee attitudes and behavior (EAB);
- ◆ product design process technologicalship management (PDTM);
- ◆ process flow technologicalship management (PFTM);
- ◆ supplier technologicalship management (STM);
- ◆ customer technologicalship management (CRM);
- ◆ distributor technologicalship management (DTM);
- ◆ technologicalship TQM (TTQM);
- ◆ others: facilitators (stakeholders) of technologicalship (OSTM).

Figure 2 provides a pictorial view of the combined representation of the e.TRM directions and granularity. When viewed in this manner, it becomes easy to depict the various CO manifestations.

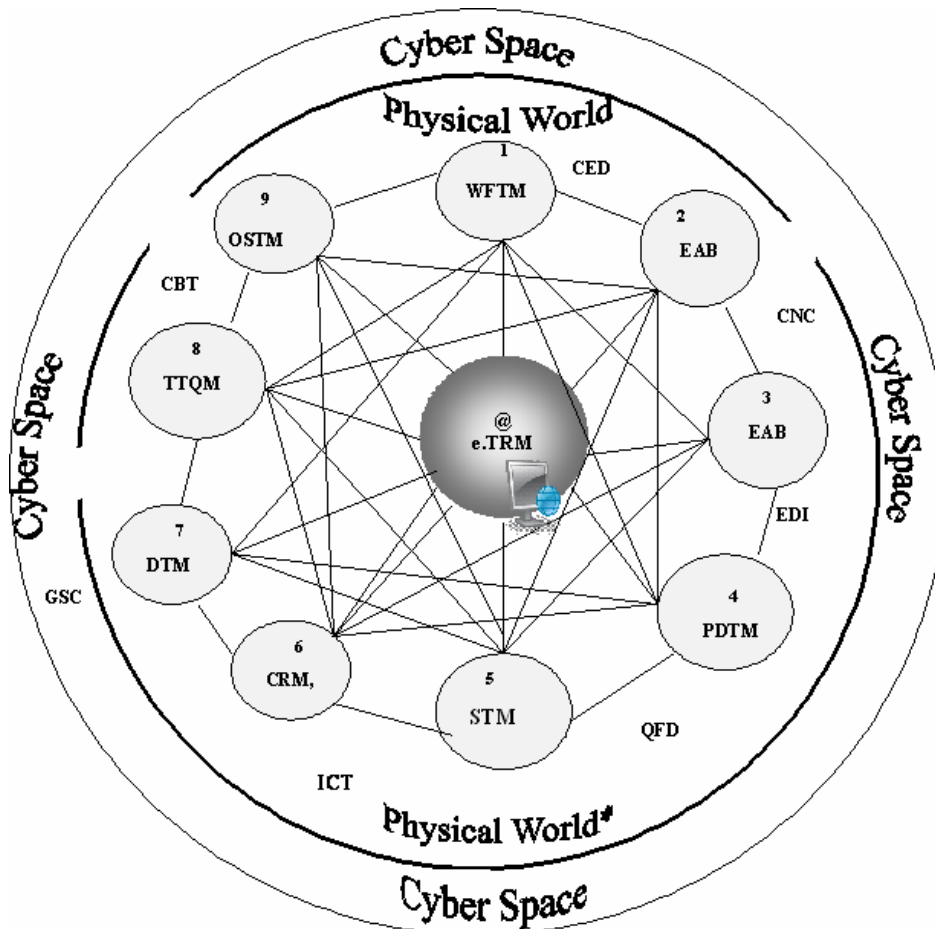


Fig. 2. Zineldin's model of e.TRM and Cybernization

*Workforce technologicalship management (WFTM)*

This is one of the areas in which e.TRM appears to have more controversial implications, in particular, in terms of the changes in the role of shop floor employees and intermediate managers as a consequence of increased levels of automation.

e.TRM can also use ICT as an agent to control work processes and as an enabling mechanism for employee initiative, autonomy and higher flexibility. e.TRM should facilitate team work because of better communications and reduced physical presence in meetings (e.g., e-mail).

*Employee attitudes and behavior (EAB)*

Within an e.TRM organization, a new organizational restructure is implied. There is a common argument that IT applications will lead to a reduction in the number of employees (e.g., Brynjolfsson et al., 1994). Some resistance of employees to this change is expected and that may reduce autonomy and commitment to company goals and objectives as well as the motivation. On the other hand, the others argue that this may not be the case (e.g., Osterman, 1986). In any case, the change in workforce attitudes that may occur after the introduction of e.TRM needs to

be considered in order to prevent decreases in autonomy, job satisfaction and employees loyalty.

*Product design process technologicalship management (PDTM)*

Implementing effective e.TRM should lead to increasing the innovation capability and capacity as the computer-aided design (CAD) technologies are a fundamental aid in the design process because of a faster response to consumer needs and greater innovation. An effective new product design and development process requires coordination and effective flow and dissemination of information between different departments (production, marketing and R&D) and ICT. ICT is also useful in design of experiments, failure mode and effects analysis (FMEA) as well as quality function deployment (QFD).

*Process flow technologicalship management (PFTM)*

e.TRM is also useful in effective implementation of the process flow management. ICT can assist maintenance through the use of automated systems to detect the need for machine maintenance and diagnose what needs to be done and this can be carried out at a location remote from the machine. Well

planned automation reduces process variance, because machines usually demonstrate less variability than workers, and results in increased speed of production processes with a significant quality enhancement (Freund et al., 1997). Automated machines require components and raw materials of high quality. Therefore e.TRM with components and raw materials suppliers is crucial. Through e.TRM, the design of processes to ensure that outcomes conform to quality requirements can be achieved along with the control of processes in which transactions are conducted on-line by using the computer numerically controlled (CNC) machinery.

#### *Supplier technologicalship management (STM)*

ICT systems improve communication links with suppliers through EDI systems. EDI can be used to place orders, send product specifications, design details, etc., along with confirmation of invoices and paying for suppliers (Teague et al., 1997). Companies can access the inventory systems of their suppliers and place orders automatically and there can also be access to production scheduling systems. IT use enables more efficient control through better information flow, firms have more incentives for building collaborative inter-firm relations, e.g., supply chain (Christiaanse et al., 2004).

e.TRM utilizes ICT to coordinate, communicate, improve and enhance the supply chain management processes. e.TRM supports both the sharing of JIT schedules and the establishment of integrated information links to reduce the level of shipment discrepancies.

#### *Customer technologicalship management (CRM)*

e.TRM emphasizes the speed and extent of the shift to electronic commerce conducted between businesses, homes and countries and starts to put into place the means of controlling such invisible processes. The development of ICT improves relationships with customers in several ways. ICT leads to direct companies-customers relationships, enabling the interchange of information. ICT enables organizations to reach customers who are geographically remote (Quelch and Klein, 1996). For example, companies can offer their products through the Internet, including explanations of the characteristics of the products, and clients can procure products and services through this means and feedback opinions about the characteristics of the products/services through the e-mail system. The use of EDI, Internet, and intranet with customers allows organizations to maintain effective communications with respect to product specifications, maps, complaints, surveys and general information.

#### *Distributor technologicalship management (DTM)*

In most industrial and service sectors, old-line channel structures have been weakened by the introduction and rapid growth of the cyber world tools such as Internet and other third-party information service providers such as CompuServe, Prodigy and America Online. Late twentieth century retailers are now able to quickly gain accurate information regarding items which are or are not popular with their customers. IT is making change the only constant in channel relationships. IT is making the world of marketing channels smaller and faster. IT allows bilateral contributions to and involvement in channel decision making.

#### *Technologicalship TQM (TTQM)*

e.TRM provides autonomy and eases the accesses and capabilities of the entire employees of different department and functions to implement the principle of TQM. The work of the TQM can be made easier because ICT and the management enable better ability to coordinate the different web of activities and relationships, collect, analyze, transfer and disseminate the information within and outside the organization. e.TRM, therefore, facilitates TQM implementation and dissemination.

#### *Others: facilitators (stakeholders) technologicalship (OSTM)*

It is not unusual for facilitators outside the firm's boundary or market environment to foster relationships. Actions by government and academic institutions influence a firm's activities. Politicians can play key roles in helping organizations secure foreign markets. In addition, many government agencies are large existing and potential buyers, and creating a long-term relationship with them can be a competitive force for a company.

e.TRM or cyber organizations need to create and maintain good cyber relationships with political parties and other regulatory agencies.

Research relationships or coalitions with universities might be considered another form of supplier relationship. Increasingly, the world's academic institutions are major suppliers of advanced technologies. Because the transfer time from theory to application is rapidly shrinking, academic contributions are directly shaping the form of new product development. Therefore, it is essential for the modern firms to create e.TRM team and paradigm technological relationships with its stakeholders.

## **6. Measuring the level of Cybernization**

The level or degree (individual, project, organization, internal, external or meta level) and the context of ICT utilization and other technological advances

are the determining factor of the degree of the organizational activities cybernization. Cybernization in the context of organizations can be viewed either as just a technology-facilitated phenomenon or as a strategic tool. The degree of Cybernization (DoC) by using e.TRM of an organization is largely a measure of the technological phenomenon of cybernity. Only when the outcomes (value creation, flexibility, growth, customization, better quality life, higher trust, commitment, satisfaction and loyalty, etc.) are analyzed to see whether e.TRM and cybernization have resulted in the intended objectives do they provide insights into whether cybernity has indeed been used as a strategic tool, allowing thereby a measure of cyber organizational maturity. It's important to recognize this difference from the perspective of both researchers and practitioners. Studying these factors or facts helping addressing the operational and tactical issues related to cybernity even while being able to assess its strategic utility by analyzing its outcomes.

Hence the next step in mapping any study of cybernity would be to identify the e.TRM direction. It can be studied at the level of individual employee, employee groups (divisions/projects) and the entire organization. The direction can be studied with reference to a single or a multi product design process, process flow, supplier, customer or a distributor of technologicalship management (STM). Likewise the direction can be studied with respect to, say, a single supplier, supplier category or all value chain partners. Such a representation recognizes the fact that cybernity as a construct is not necessarily relevant only to the organization as a single entity. It is as relevant to an employee or a project team within an organization as it is to the organization or indeed the meta-organization (extended organization). The implications for performance and the associated inferences could be different depending on the level of granularity at which we wish to study the phenomenon. Therefore the mechanism to measure cybernity should also be such that it is customizable to the level at which cybernity is being examined.

This model can then help to analyze whether there is an association between higher levels of cybernity and these outcomes. Another important insight that one can derive from this model is the clarity that emerges in measuring Cybernity, both from the technological perspective through the DoV and from the strategic perspective through the VOM.

### **Conclusion and managerial implications**

It is obvious that nowadays organizations and people will have difficulties in separating a relation-

ship from ICT. In this article, the e.TRM, cybernization and the technologicalship concepts are introduced to indicate the close and almost inseparable partnership between the physical and cyber worlds. In short, such a cybernization of the organization and people minds can be considered as a new paradigm. This paper emphasizes the inherent multidimensionalities of cybernization of the organization and its various internal and external activities and relationships.

For any meaningful operationalization of this model it has to be transposed on to the appropriate points of granularity and direction discussed earlier, because it is important to understand the context in which we are attempting to measure the level of cybernization and the stakeholder's perspective from which we are attempting to analyze its outcomes. This leads to a considerable number of possible variants of the model. Together these should be able to capture the study of cybernization from a variety of perspectives. The direction would capture the stakeholders being considered, the granularity would lead us to the appropriate unit of analysis in the operationalized measure, and the influencers would accommodate the multiple disciplines and theoretical perspectives from which the CO could potentially be studied.

ICT and CBT tools should be used to provide relationship-building credibility and opportunities. It is obvious that nowadays organizations and people will have difficulties in separating a relationship from ICT. Thus, we argue in this paper that technologicalship relationship and e.TRM should incorporate both physical and cyber worlds. We integrate these two worlds to show the inseparable nature and impact of the ICT on all kinds of relationships.

A cyber organization is a type of offering, via the e.TRM a natural linkage between the internal and external environments and the interaction processes because it emphasizes how technologies, people (including consumers and other stakeholders) and other organizations function in a win-win interaction. This combined perspective yields comprehensive insight into the impact of the technologies on relationship management of today's cyber world. By failing to utilize e.TRM and technologicalship philosophy, organizations risk being isolated, while successful organizations move ahead together toward the rest of the XXI century with its borderless or virtual reality.

Finally, the issue of the cybernization of the organization and its relationships deserves more comprehensive theoretical and empirical research.

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