



COMPETING IN THE GLOBAL MARKET

The purpose of this publication is to make available to industry the results of research conducted by the Construction Industry Institute (CII). The publication does not necessarily represent the views of CII member companies, but is offered as a contribution to the industry.

CII was founded in 1983 to improve the cost effectiveness of the nation's largest industry. The members, who represent a broad cross-section of owners and contractors, believe that many of the problems that limit cost effectiveness are common ones, and that real improvements can be best accomplished in a cooperative environment with the benefits being shared by the construction industry at large.

CII uses the acronym TOPICS to describe the research effort. TOPICS signifies the six research thrust areas: Technology, Organization, People, Information, Controls, and Sigma (meaning others). The task forces for each area are listed below.

Technology

- Advanced Technological Systems
- Computer Integrated Design & Construction
- Design for Safety
- Environmental Remediation Technology
- Technology Strategy

Organization

- Partnering II
- Project Change Management
- Project Organization II
- Pre-Project Planning
- Project Team Communications

People

- ADA Impacts
- Continuing Supervisory Education

Information

- 3D CAD Link
- International Construction
- Owner Engineering Organization

Controls

- Change Order Impacts
- Contracting, Phase II
- Dispute Prevention and Resolution
- International Standards
- Predictive Tools
- Quality Performance Measurement
- Schedule Reduction
- Total Quality Management

Sigma

- Barriers to Implementation
- Piping Function
- Retrofit Projects
- U.S. Navy Demonstration Project
- Workers Compensation

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Executive Summary

From 1971 to 1985 the U.S. engineering/construction (E/C) industry lost approximately half its international market share. Although recent trends show some recovery, global competition continues to grow and strengthen. A greater emphasis on global thinking by U.S. firms will be required for sustained competitiveness and growth in the international construction arena.

Considering the slow-growth economic forecast for the U.S. construction industry, U.S. firms cannot afford to ignore opportunities in other countries. Development of strategies and technologies that respond to current and future customer needs will make both, the owner companies and the E/C firms, more competitive in the international marketplace. It is imperative for U.S. firms to plan for the future, which often will include the formation of international alliances. Awareness of the needs of global customers and an understanding of the key elements determining the success of international alliances are the subjects of this publication.

Customer Needs

E/C customers are keenly aware that there is an ever-changing global marketplace and that sharp and growing international competition exists in every business field. Sustained competitiveness in an increasingly diverse and demanding world is the fundamental concern of every corporation, irrespective of its nationality. Discussions with the world's top companies surfaced hundreds of future directions and concerns. The importance of visionary leadership is the most consistently recurring theme. Sensitivity to environmental issues permeates all considerations, and sustainable development is a worldwide subject in search of specific answers. Integrated project leadership and implementation teams, technological innovation and greater cost effectiveness are insistent demands that will affect the E/C industry. The often contradictory needs were grouped into a "hierarchy" that allows assessing their impact and developing responses.

Alliances

The level and intensity of competition is growing dramatically throughout the world, raising the standard for competitive success. The interviews with international companies suggested a need for new approaches to international business relationships. One of the most promising strategies is the teaming and long-term relationship with foreign companies. Through such alliances, both owners and E/C firms can address many of the identified needs and meet future competitive challenges.

For many years, companies in Europe and the Asian Pacific Rim have practiced a spirit of cooperation and teamwork among competitive construction firms and with their governments. The number of alliances between American, Asian and European firms (in all industries) grew thirty-fold during the previous decade. This trend will likely continue well into the twenty-first century.

Alliances are formed for many reasons. The analysis of the most prevalent benefits yielded a “hierarchical” relationship similar to the one for customer needs, allowing cross-matching with many future client expectations. Through a comparative study of how alliances operate in Asia, Europe and the U.S., the task force developed an Alliance Implementation Model that assembles the key elements of success.

Introduction

The share of the international construction market serviced by US companies has fluctuated wildly during the second half of the 20th Century. A period of strong dominance (1961-1971) was followed by a decade of steep decline (69 percent in 1971 to 33 percent in 1981). During the following ten years the U.S. share fluctuated within a narrower range reaching a low of 24 percent in 1987 and a high of 45 percent in 1991 (*ENR* data). Although the accuracy of these numbers is questionable and open to debate, the loss of market share is undeniable and related to a decline in the international competitiveness of U.S. construction contractors. It also can be viewed as the result of a steady growth in the capabilities and aggressiveness of international competitors.

Declining business performance such as this is typically caused by a combination of three characteristics: a change in the nature and intensity of competition in the markets served, the existence of significant competitive disadvantages in product quality or costs, and a strategy that is inappropriate (usually because it is outdated) or inadequately executed. All these factors were present during the declining years and will resurface with greater intensity in tomorrow's drastically different global environment.

The International Construction Task Force was chartered in May 1990 to research international competitiveness factors and develop information that could assist U.S. firms in meeting the future challenges of the global marketplace. The task force studied two aspects which, it felt, could have immediate impact on the international performance of E/C firms:

1. Customer Needs—What are the key future needs of the global customer? What types of E/C services will be demanded and what actions are necessary to respond to these demands?

Rather than focus on the past and project a future based on historical trends, the CII task force decided to define the future of the engineering/construction industry by questioning those that are creating the radically different world of tomorrow: the customers of E/C services themselves. These customer needs

have already changed drastically in the past decade and will continue to do so at an even faster and more fundamental pace. E/C companies need to recognize these future **“needs”** of their global customers and pre-position themselves for new market demands. It is also of value to understand the underlying forces that are driving the E/C customers to change their demands and expectations.

The task force analyzed a great number of expressed needs and attempted to understand them within a hierarchical framework. This led to an effort at identifying the impact these “needs” will have on E/C firms and formulate responses. The results should not be viewed as a recipe or a blueprint to master the future, but as a provocation to think about the issues and demands that will shape our future.

The concept of a global economy is changing the traditional perceptions of national borders. As these borders become more open, competition for construction projects will continue to increase. In addition, dwindling resources are causing governments to evaluate non-traditional options to generate the needed revenue and expertise to undertake public construction projects. There is keen awareness of the great differences among regions and individual countries. The classic division of markets into Developing Countries, Newly Industrialized Countries and Industrialized Countries is almost universally recognized. Each of these markets has a set of common needs, desires and standards that are easily identifiable. This study attempted to break out of traditional thought patterns and identify needs that will be fundamental to the future global markets and therefore valid everywhere.

2. The benefits of alliances—What types of alliances are used throughout the world? What characteristics would be effective in increasing the international competitiveness of U.S. firms? What would a model alliance look like, that incorporates the observed success factors? What future needs could be satisfied through international alliances?

International competitors have developed innovative business strategies over the past decades, that E/C firms need to understand and, where appropriate, adapt to sustain and regain international market share. The construction industry, faced with the continuing move toward a global marketplace, must examine the possible competitive advantages offered by alliances. The formation of alliances has given foreign competitors an advantage and has contributed to the downward trend in the U.S. share of the global market.

The task force defines an alliance as *“a **long-term** association with a non-affiliated organization, used to further the common interests of the members.”* Alliances will play an important role in determining the future growth of many companies. This second study researched the nature of alliances and their benefits as perceived by companies that have participated in successful and unsuccessful relationships of this kind. An analysis of how alliances are practiced in Asia and Europe provided valuable insight on the cultural aspects that play such an important role when two organizations with different cultures attempt to work together. International E/C companies must be aware of the ramifications in forming alliances. Not surprisingly, it was found that the formation of “alliances” also responds to many of the future “needs” identified.

Research Approach

The research is based on interviews with a representative number of international owner and contractor firms.

In surveying customer needs, 29 interviews in diverse industries were conducted, representing many fields: petroleum, chemicals, electronics, automobile manufacturing, government and research institutes. The objective of every interview was to gain an appreciation of the customer’s perception of the future and the direction the needs of their own customers may take. For international alliances the task force members conducted 30 additional interviews with senior international construction executives.

The interviews included 15 of the *Fortune* top 50 global companies and 25 of the *ENR* top 50 International E/C firms. The firms interviewed for both studies are listed in Appendix B. The map below (Figure 1) illustrates the global reach of this study.

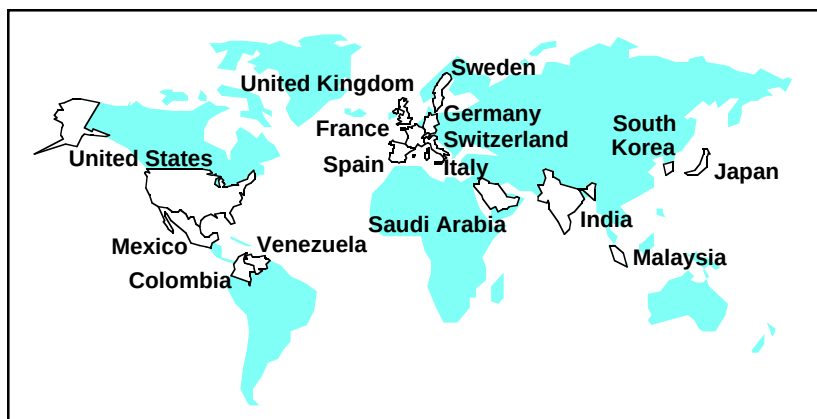


Figure 1. The world-wide research scope

Task force members used their professional contacts and networks to identify high level executives, key planners and decision-makers in these global companies. Taking advantage of their extensive international business travels, they personally conducted most interviews on site to assure effective communication. A few interviews were conducted by colleagues, located in the particular country, who were extensively briefed in advance. The goal throughout the interview process was to gain not only practical information identified in questionnaires submitted in advance, but to allow for the free expression of ideas and new directions. Therefore no boundaries were established for the discussions and preconceived notions were avoided as much as possible.

The 200 hours of taped conversations were analyzed for recurring themes and key concepts central to the interviews conducted. This approach yielded fresh ideas and insights that were grouped and organized for interrelations and trends. The task force then developed responses to the “needs” and created the Implementation Model for an International Construction Alliance (Appendix A).

How the Customer Sees the Future

The approaching turn of a millennium has heightened the curiosity and uneasiness about the immediate future. Not surprisingly, all interviewees expressed a broad array of often contradictory “needs,” many times articulated in terms of definite demands. E/C customers, like most other businesses, are giving much thought to the future needs of their own customers.

Apparently contradicting statements, such as:

“We want to be both:

Global and local

Big and small

Decentralized with central guidance

Flexible and dominant

Leading and responsive.”

illustrate the future envisioned by global customers better than any long description.

The most fundamental driving force over the next decade is the need to sustain competitiveness in an increasingly diversified and demanding world. This need could be sensed in every discussion and underlies all concepts of the future and the many strategies being considered.

Competition will be particularly severe in the international markets. To remain a long-term player in the global arena, a company must be able to operate in an environment that is rapidly advancing in both technology and products offered. The rate of this progress is extraordinary and has no parallel in history. Particularly companies offering a wide product range will have to display unprecedented flexibility to be able to deal with continuously growing, world-wide competition.

When the interviewed E/C customers assessed their future directions, the discussions invariably touched on two kinds of needs: those derived from the demands of the ultimate customers, the ones who use and consume the final products, and those expressing the expectations of the direct E/C client. These two perspectives are different but strongly linked and together provide

a comprehensive picture of the demands that the decade has in store. This chapter discusses the first kind of needs (those of the ultimate customer) and Chapter 3 covers the second (those of the E/C's client).

To give some order and structure to the vast number of needs expressed and focus on the areas of importance to E/C firms, a hierarchical relationship was developed. The articulation, grouping and relating of all the key ideas collected from the interviews and many related readings resulted in the identification of nine underlying themes, which in turn could be grouped into five basic target areas. The needs and expectations in these five basic areas will determine the characteristics of the future services provided by E/C firms.

1. Leadership: Visionary leadership will determine the future success of a company. The vision demanded must see the whole and not only the immediate sector addressed by an individual project. The full effects and consequences of a project and the products produced must be recognized and dealt with up-front. The whole must be improved, instead of sub-optimizing only a part or element. Globalization, one of the most prevalent strategies, is based on this premise. The expansion into global markets, characterized by culturally customized products, is accompanied by a reassessment of a company's core competencies and the outsourcing of many functions previously done in house.

2. Social acceptability: Today, global companies see themselves subject to the acceptance by the society they operate in. The neighborhood, the city, the country must see value in a company's activities. Preservation and improvement of the environment is the foremost issue in this area. The environmental impact of any business endeavor is becoming a key business issue and will be managed as such. It is also generally recognized that adversarial positions, so prevalent in the past between government and industry, must be mitigated to survive in a more competitive global environment.

3. Cost effectiveness: The cost of plants, buildings and national infrastructure elements, such as roads and dams, will remain extraordinarily important. Limitations on available funds will demand drastic increases in both effectiveness (working on the right things) and efficiency (doing things right). The effectiveness and efficiency of today's tailor-made construction, for example, is increasingly being questioned.

4. Innovation: The world is in a period where the rate of invention is accelerating and production cycles are becoming shorter. New products emerge constantly and manufacturing standards change more rapidly than ever before. Continuous improvement of existing products and processes and the development of new ones are considered essential for future survival. Innovation is seen as the main tool with which to satisfy the demand for quality, environmental protection and sustainable development.

Growing worldwide technical and scientific competence will sharpen competition. As technology becomes a commodity and competitors reach the same level of competence, it will be speed and creativity in the application of technology that will make the difference. In tomorrow's competitive international environment, raising quality standards will be the normal background for all business activities. Speed of execution and creativity in all areas will be among the most important ingredients of business success.

5. Organizational effectiveness: Organizations of the future will be very different from those familiar today. Teamwork and groups that fully integrate members from different companies will become common. Organizational structures will have to be flexible, responding rapidly and easily to changing conditions and different environments around the world. The role of management will change from one of control to one of support and enablement.

The "hierarchy" of future needs, shown in Figure 2, provides a broad overview of the many forces that will drive global strategies. While tabulations of this kind cannot claim to be without omissions, it will fulfill its intent if it stimulates discussion and analysis of a company's strengths and future objectives. CII Source Document 90, "The Future Needs of the Construction Industry's Worldwide Customers," discusses all these needs in greater detail.

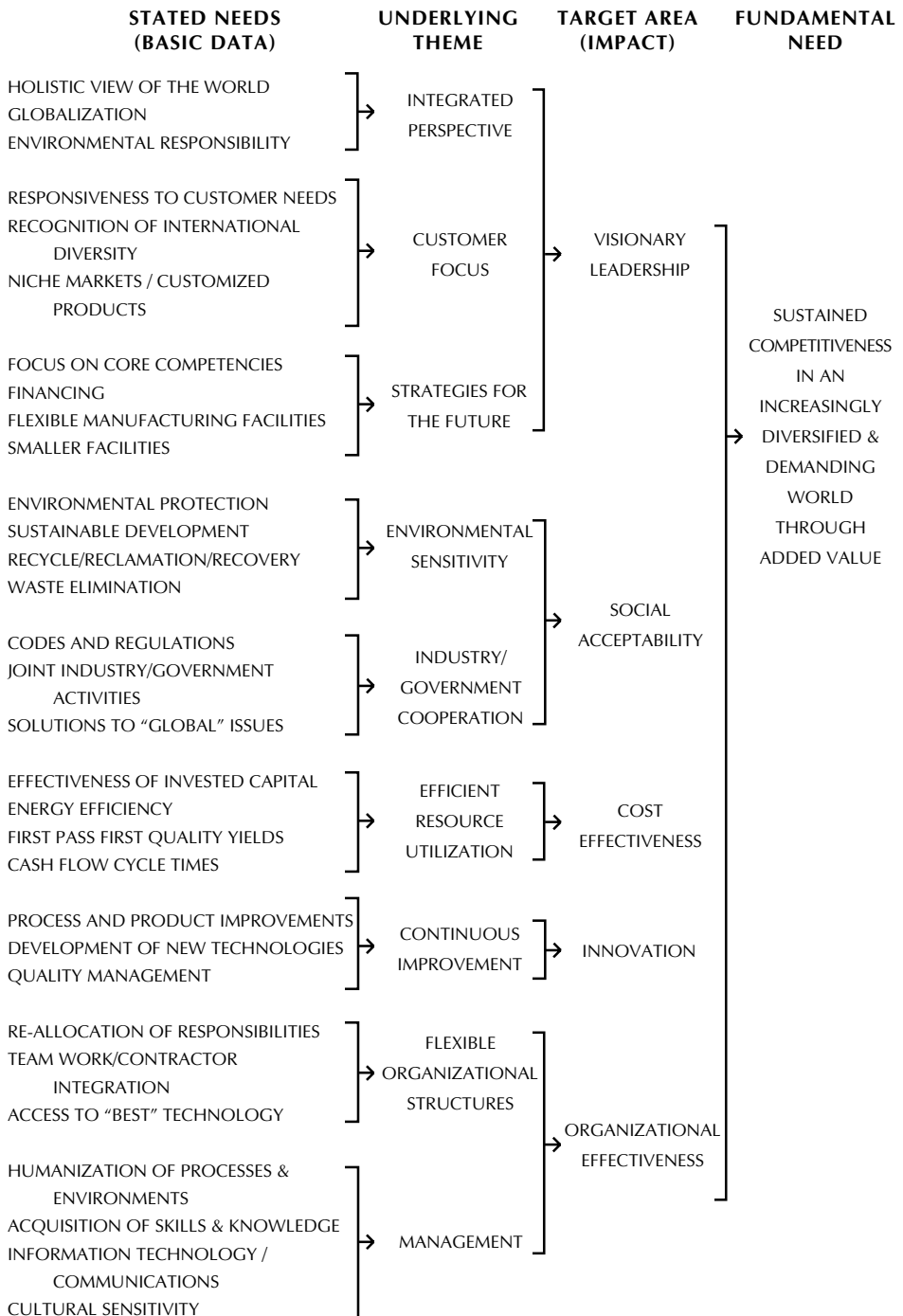


Figure 2. Hierarchy of Future Needs

What the Customer Expects

For every fundamental “need” the interviewed customers articulated an expectation concerning the future services and behavior of E/C firms. Traditionally, E/C firms have been service providers more than product developers. This will continue to be their main focus. However, the scope of these services, and with it the customary behavioral patterns, must change. The customer expects strong, varied and value-adding contributions in the future, not simply the unquestioned execution of the past. A conceptual “partnering” between client and E/C firms is envisioned, each contributing to the success of the other.

E/C firms will be expected to perform project engineering, design and management of construction as in the past and, at the same time, be involved in the development of investment strategies, coordination of services, product development, and public responsiveness. Many of the functions previously done by the client’s engineering organization will be allocated to E/C firms. This trend, which began several years ago, will accelerate. It signals a move away from the traditional role of a general contractor who took relatively final documents from the client’s team and delivered the constructed facility in any form desired. The future international E/C firm is expected to participate in the conceptual development of a project and present the client with lower cost alternatives and solutions to unprecedented issues. In other words, the E/C firm is expected to contribute its full knowledge and experience.

Figure 3 summarizes the expectations directly related to the customer’s fundamental needs identified in the previous chapter.

E/C firms will need to become lean and flexible in providing the diverse services required for concept development, innovation, design and construction. To avoid becoming a large and ponderous organization, E/C firms will obtain supplemental services through a network of specialty firms working as partners. Such alliances will be the vehicle to accept the redistribution of functions and simultaneously meet the dynamic and expanding needs of the customer.

Underlying Theme	Customer Need	Expected E/C Services
INTEGRATED PERSPECTIVE	HOLISTIC VIEW OF THE WORLD	→ SOLUTIONS ADDRESSING ENTIRE SYSTEMS
	GLOBALIZATION	→ OPERATING CAPABILITIES IN SPECIFIC COUNTRIES
	ENVIRONMENTAL RESPONSIBILITY	→ IDENTIFY LARGER CONSEQUENCES
CUSTOMER FOCUS	RESPONSIVENESS TO CUSTOMER NEEDS	→ KNOWLEDGE OF CUSTOMER'S BUSINESS
	RECOGNITION OF INTERNATIONAL DIVERSITY	→ FACILITIES APPROPRIATE TO REGION & CULTURE
	NICHE MARKETS / CUSTOMIZED PRODUCTS	→ INCORPORATION OF 'LOCAL' MATERIALS & STANDARDS
STRATEGIES FOR THE FUTURE	FOCUS ON CORE COMPETENCIES	→ CONTRIBUTION OF SPECIALIZED KNOWLEDGE
	FINANCING	→ FINANCIAL CONTACTS AND ASSISTANCE
	FLEXIBLE MANUFACTURING FACILITIES	→ PROVISIONS FOR EASY RECONFIGURATION
	SMALLER FACILITIES	→ PORTABILITY, MODULARIZATION
ENVIRONMENTAL SENSITIVITY	ENVIRONMENTAL PROTECTION	→ APPLICATION OF SPECIALIZED TECHNOLOGY
	SUSTAINABLE DEVELOPMENT	→ ALTERNATIVES / NEW POSSIBILITIES
	RECYCLE/RECLAMATION/RECOVERY	→ ENVIRONMENTALLY SENSITIVE CONSTRUCTION
	WASTE ELIMINATION	→ WASTE REDUCTION IDEAS
INDUSTRY/ GOVERNMENT COOPERATION	CODES AND REGULATIONS	→ REVIEW AND CONSOLIDATION OF NATIONAL REGULATIONS
	JOINT INDUSTRY/GOVERNMENT ACTIVITIES	→ PARTICIPATION IN NATIONAL RESEARCH CONSORTIA
	SOLUTIONS TO 'GLOBAL' ISSUES	→ CONTRIBUTION TO MULTINATIONAL INITIATIVES

Figure 3. Fundamental “Needs” and Related E/C Service Expectations

Underlying Theme	Customer Need	Expected E/C Services
EFFICIENT RESOURCE UTILIZATION	EFFECTIVENESS OF INVESTED CAPITAL	→ SHORTER PROJECT CYCLE TIMES
	ENERGY EFFICIENCY	→ APPLICATION OF BEST CONSTRUCTION TECHNOLOGIES
	FIRST PASS FIRST QUALITY YIELD	→ STANDARDIZATION / SYSTEMS APPROACH
	CASH FLOW CYCLE TIME	→ LIFE CYCLE COST APPROACH
CONTINUOUS IMPROVEMENT	PROCESS AND PRODUCT IMPROVEMENT	→ HIGH EQUIPMENT RELIABILITY
	DEVELOPMENT OF NEW TECHNOLOGIES	→ ELIMINATE NON-VALUE ADDING ACTIVITIES
	QUALITY MANAGEMENT	→ CONTRIBUTION TO CUSTOMER'S TECHNOLOGY
		→ DEVELOPMENT OF NEW CONSTRUCTION TECHNOLOGY
FLEXIBLE ORGANIZATIONAL STRUCTURES	RE-ALLOCATION OF RESPONSIBILITIES	→ TQM IN CONSTRUCTION
	TEAM WORK/CONTRACTOR INTEGR'N & INTERF.	→ CONTRIBUTION AND EXECUTION
	ACCESS TO "BEST" TECHNOLOGY	→ INTEGRATED ORGANIZATIONS WITHOUT DUPLICATIONS
		→ ALLIANCES & PARTNERSHIPS
MANAGEMENT	HUMANIZATION OF PROCESSES & ENVIRONMENTS	→ ERGONOMIC FACILITIES
	ACQUISITION AND OF SKILLS & KNOWLEDGE	→ LIFELONG TRAINING & DEVELOPMENT
	INFORMATION TECHNOLOGY / COMMUNICATIONS	→ INTEGRATED DATA COMPATIBLE WITH CUSTOMER'S
	CULTURAL SENSITIVITY	→ ADAPTATION OF LOCAL PRACTICES

Figure 3. Fundamental “Needs” and Related E/C Service Expectations (continued)