STRATEGIC MANAGEMENT PRACTICES IN JAPANESE CONSTRUCTION INDUSTRY - IMPACT OF A STRATEGIC INITIATIVE -

Kiran Momaya[1] and Ken Selby[2]

[1]Ph.D. Candidate, Dept. of Civil Eng., University of Toronto

[2] Professor, Dept. of Civil Eng. (35 St. George Street, Toronto, ON CANADA M5S 1A4)

Construction industries in Canada and Japan are undergoing major changes. Despite considerable strengths, they also face some serious problems. The aim of this research is to quantify the relative competitiveness of the construction industries in Canada and Japan, with emphasis on their strategic management practices. Hence, the research in Japan focused on understanding strategic management practices in the Japanese construction industry (JCI). The research framework and the results of evaluation of a strategic initiative in JCI are presented.

Key Words : *Construction industry, strategic management, strategic initiative, Canada, Japan, competitiveness*

1. INTRODUCTION

The construction industries in Canada and Japan are passing through a transitional phase. The transition is driven by some common as well as some specific forces. Common forces include globalization, information age, recession and resulting restructuring and a fundamental shift in market (from new construction to repair and renovation). The specific forces in the case of Canada are the increased use of alternate dispute resolution methods, changes in taxation (i.e. capital gains tax) and emergence of NAFTA. Rapid political changes, reform of contracting and other systems in the industry and internationalization are examples of the transitional forces occurring in Japan.

A sustained market created by major infrastructure developments and long periods of economic expansion in the past meant that the Canadian construction industry (CCI) did not need to look beyond the national borders (or at the most beyond North America) for work. But construction's declining share of the GDP, two major recessions in past 15 years and resulting problems may have made Canadian construction companies consider an international perspective. Success in international markets will require that they are competitive internationally. Considering a large number of bids (particularly during recessionary times) and the associated low prices, CCI appears very cost competitive. However, looked in a broader perspective, it is felt that the industry as a whole is not competitive [1].

A major motivation for this research is to evaluate, how Canada's construction industry can perform at the international level. A preliminary evaluation and a literature review indicated the possibility of some serious problems of competitiveness in CCI. As well, it was felt that CCI was failing to nurture its educated and skilled human resources, which can be its most valuable

asset for the 21st century. The efforts are directed to quantify the seriousness of these problems.

Recognizing the importance of international comparison, the research focused on JCI for comparative analysis. Strategic management plays a crucial role in ensuring a healthy, lively and competitive industry. Hence, the key issue of comparison is strategic management practices in the construction industries. This paper focuses on strategic management practices in JCI in terms of the impact of a major initiative.

2. STRENGTHS AND PROBLEMS OF THE INDUSTRY

The research revealed unique strengths of the construction industries in Canada and Japan as listed below. At the same time, they face some major problems which may hamper their long-term competitiveness, if left unattended.

(1) Strengths of CCI

* High labor productivity : Canada had the highest relative labor productivity in construction among 11 OECD countries for most of the '80s [2].
* Excellent infrastructure : Canada had been able to build sophisticated infrastructure with active participation of CCI.
* Success in satisfying the needs of its stakeholders : The CCI appears to have been quite successful in satisfying needs of people (e.g. housing) as well as the needs of its work force in terms of reasonable wages, safe workplace, etc.
* Ability to ensure good supply of raw materials

(2) Strengths of JCI

* Timely quality construction : JCI has earned repute for timely completion of construction projects with high quality and minimum of disputes.
* Investment in R&D : JCI has heavily invested in R&D for last few decades. Through R&D, it has improved the construction processes and harnessed new technologies to satisfy increasingly sophisticated needs of its clients.

(3) Problems of CCI

Many of the problems of the industry in Canada and Japan may have common ground, because they arise from the peculiarities of the industry. Canada and Japan both have large construction industries with very high construction investment as % of GNP. The figures were about 15 % for Canada and 18.2 % for Japan as compared to 7.1 % for U.S., 7.6 % for U.K., 12.1 % for France and 12.6 % for F.R.G. in 1991[3]. The construction industries in both countries may have to adjust to a declining share of GNP. Stagnating labor productivity was a problem for JCI during the late '70s and early '80s, it has been a problem for CCI since the late '80s. Several other problems of CCI listed below motivated this research.

* Short term view, lack of vision and coherent action plan to address persistent long-term problems of the industry
* Lack of innovation, upgrading and corporate investment in R&D
* Unstable industry environment resulting in difficulty in formulating & implementing long-term policies
* Delays, cost overruns, degraded quality
* Persistently high unemployment
* Intense competition and bid shopping often leading to claims, litigation and bankruptcies
* Limited international activity
* Lagging behind in investment for the future (i.e., Human Resources, R&D)
* Lack of major projects capability
* Poor financial performance compared to other Canadian industries in general

3. DEFINITIONS

Two key words, namely competitiveness and strategic management are very general and have different meanings in different contexts. It would be desirable to define them as used in this research. The concept and definition of competitiveness at the country, sector and company levels is explained in the World Competitiveness Report (WCR)[4]. The focus of this research is on competitiveness at the sector or industry level. While the WCR definition may appear quite satisfactory from the perspective of an external observer (or investor), it is felt that it can fail to recognize the important viewpoints of the key stakeholders of an industry. Hence it was modified by including the important role of customers and stakeholders of the industry to make it more relevant. The resulting definition of sector competitiveness follows :

Sector / Industry Competitiveness : Extent to which a sector / an industry

- satisfies needs of customers in terms of the following product/service characteristics : price, quality, availability, selection, styling, engineering, durability, use, etc.
- satisfies needs of its constituents, for example, workers in terms of safe workplace, employment, etc.
- offers potential for growth
- offers attractive return on investment

Strategic management in simple terms means : *long term planning and implementation to ensure a healthy environment.* The environment can be conceptualized at the industry level as well as at corporate level. A more specific definition is : *continuous process of scanning the external environment and adapting the internal environment so that an organizational entity's (an industry or a corporation) vision and objectives can be realized.*

Strategic management and related terms are used more frequently in a corporate context. It may be worthwhile to understand two key terms associated with strategic management as defined by management theorists [5] :

Strategy is the pattern or plan that integrates an organizations major goals, policies, and action sequences into a cohesive whole. A well-formulated strategy helps to marshal and allocate an organization's resources into a unique and viable posture based on its relative internal competencies and shortcomings, anticipated changes in the environment, and contingent moves by intelligent opponents.

Strategic decisions are those that determine the overall direction of an enterprise and its ultimate viability in light of the predicable, the unpredictable, and the unknowable changes that may occur in its most important surrounding environments. They determine the effectiveness of the enterprise rather than whether individual tasks are performed efficiently.

4. RESEARCH FRAMEWORK

Industries and corporations neither exist nor operate in isolation. They are part of an environment that includes various systems : political, social, economic, educational, etc. A major problem facing a researcher of management practices in an industry is lack of a framework that explains the interfaces in an industry environment. The framework should help generate and explain questions such as:

* What generates the need to take strategic decisions ?
* What parameters these strategic decisions aim to influence ?

* How these decisions are implemented to achieve results ?
* How can we evaluate the success of these decisions ?
* What should be done to improve the overall process of strategic management and hence the health of an industry ?

It is possible to visualize the interfaces between the external environment and the internal environment of an organizational entity from an open systems perspective. The external environment has a profound impact on the internal environment of the organizational entity. An attempt was made to develop a conceptual framework (shown in Fig. 1) that can help explain the interfaces between external environment, industry and corporation.

It is argued that problems in an industry or organization arise because of its inability to adapt to major changes in the external environment. It is true that an organizational entity (very often collectively) does have some influence on the external environment, but in most situations it needs to adapt internally. It is assumed that the status of and changes in the external environment can be depicted by a few key parameters. Changes in the external environment create the need to take major decisions.

The research examines strategic management at two levels : industry and corporation. At the industry level, the key decisions are translated into generic policies related to trade, training, procurement, etc. Some of these policies may be formulated by the governments at federal, provincial or municipal level. Others may be formulated by the stakeholders of an industry, i.e. industry associations.

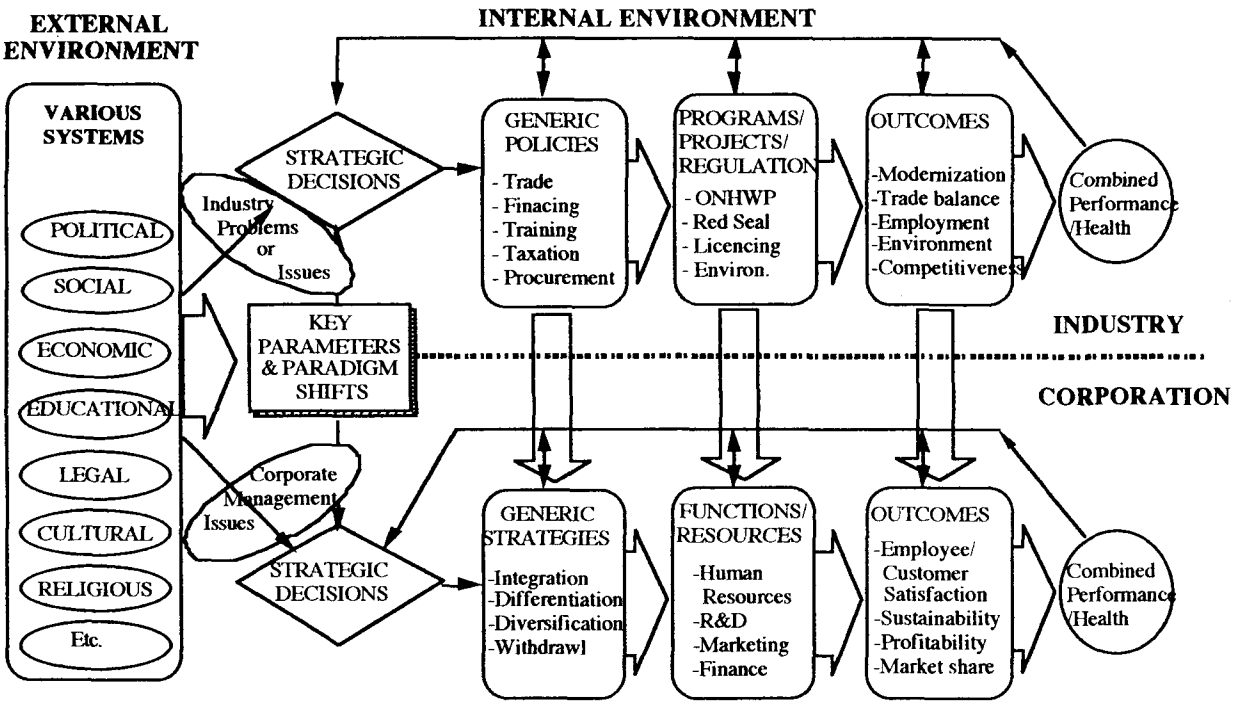

Fig. 1 Strategic interfaces in an industry environment

These policies are implemented through specific programs or projects or regulations. For example, there are joint industry/labour efforts to establish standards and improve labour mobiliy in Canada through a national Red Seal certification program on apprenticeship trades[6]. Ultimately, these policies are formulated to have a positive impact on specific outcomes, measures of performance or health of an industry. Performance measures help take strategic decisions and revise policies or programs by providing benchmarks and feedback.

A similar cycle may exist at the corporate level as well. The decisions, policies and programs at the industry level have a major influence on generic strategies of a corporation and resource allocations. In reality, most resource allocations are made at the corporate level and corporate performance has a significant impact on industry performance. This research focuses on the methodology to evaluate the relative competitive performance at the industry level. This paper describes the results of applying the framework of industry interfaces to the context of JCI, with focus on evaluating the impact of a major initiative.

(1) An example of strategic initiative

The framework of strategic interfaces in an industry was applied to the context of JCI to ascertain its usefulness. This example illustrates the impact of changes in the external environment that resulted in the necessity for a major initiative in JCI. In the early '80s , JCI was passing through very difficult times. Some of the suggested reasons are :

* Stagnation caused by the oil shocks of the '70s and resulting decline in capital investment outlays
* Freeze on government spending on public projects
* Increasing competition by new entrants
* Declining labor productivity and worker shortages

There have been significant changes in the external environment of JCI over the last decade or two. Analysis of the external environment indicated that the root of JCI's problems may lie in the industry's inability to adapt to major changes in the external environment. Examples of these external changes are :

* Impressive gains in productivity achieved by other industries (particularly manufacturing) and resulting prosperity
* A major shift in orientation of the Japanese society from economy to people
* Ability of other industries to improve management, offer better working environments and hence attract women, youth, etc.
* A paradigm shift in Japanese government policy : from protection of industry to fostering of industry.

These changes created the need for the industry to take major decisions. In October 1984, the Ministry of Construction formed an industrial research team comprised of academics, economists, officials, corporate planners and marketing specialists related to, and working for the construction industry[7]. The results of the efforts of the team, "Vision of the Construction Industry towards the 21st Century" is referred to as the Bible of the construction industry administration and is considered as a major milestone reflecting change in the ministry's policy. The vision called for creating an "Active and challenging construction industry that makes constructive efforts for modernization of companies and the industry, rationalization of

industry organization, productivity improvement and creating demand by developing new fields." The framework explaining this initiative is shown in Fig. 2. The Vision called for developing generic policies to tackle long-term problems of the industry. The specific areas of target of these generic policies were productivity improvement, R&D, modernization, market stabilization, etc. The initiative was implemented through specific programs like "Structural Improvement Program." This effort by the ministry served as a major stimulant for the industry, particularly for leading contractors to plan survival strategies using modern management concepts and techniques. Many large architecture/ engineering/ construction (AEC) firms developed long-term plans (or vision for the 21st century) and implementation policies. An example of such a long-term plan and vision in a large AEC firm was discussed through a case study[8].

5. RESULTS

(1) Key indicators

The initiative described above provides a unique example of an active role of administration (at a national level) to look into the problems of the construction industry and direct efforts to improve its health. The key questions that this research attempts to address are :

* Was the initiative successful in achieving its objectives ?
* Do such initiatives produce beneficial results for an industry ?
* Can we quantitatively evaluate such benefits ?

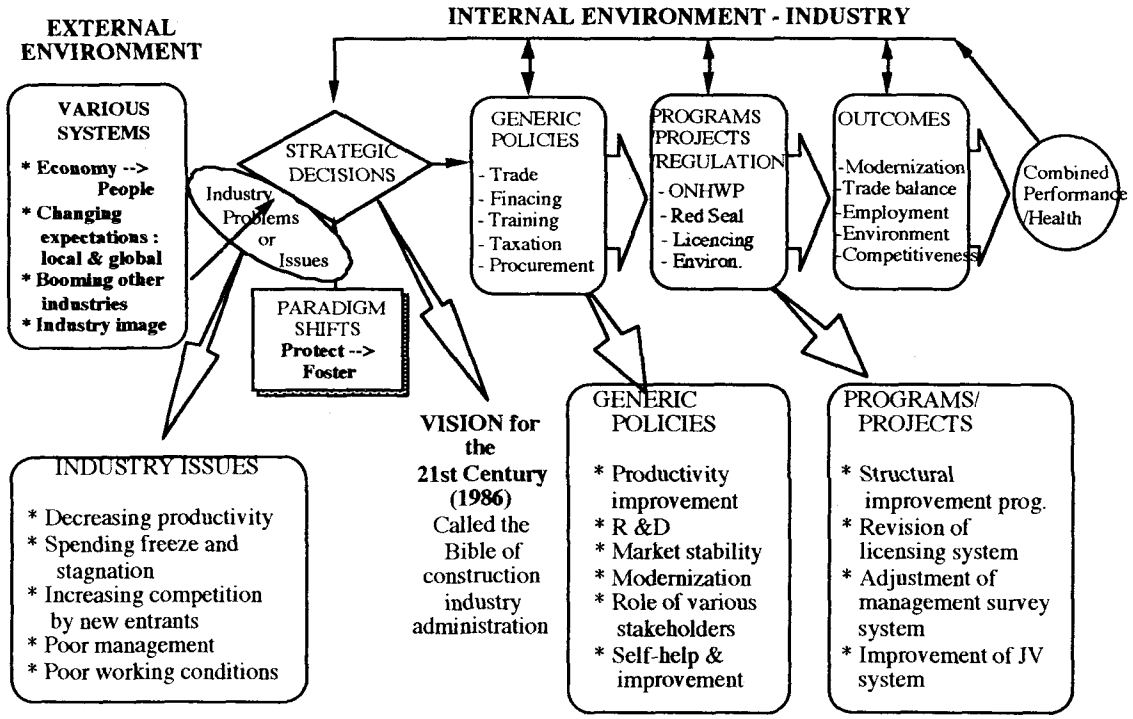

Fig. 2 Example of a strategic initiative in JCI

One way to answer these questions may be to measure the change in some key indicators. Ideally these indicators should be directly related to the problems of the industry that the initiative addresses, i.e. labor productivity or unemployment. However, availability of reliable quantitative data about such parameters does constrain the selection of indicators. The indicators selected for the purpose of this research and their importance are listed below.

a) Labor productivity index

JCI's low labor productivity and negative trend during the early '80s was considered to be a major problem. The gap between manufacturing and construction productivity was rapidly widening. That is why raising labor productivity appears as a key theme in the vision. It is one of the best macroeconomic indicators of the health of an industry.

b) Construction R&D expenditure

Research and development are considered indispensable to enhancing productivity in Japan[3]. Some of the key goals of the vision like modernization, integration of construction process, image improvement, satisfying needs of the people through innovative solutions and diversification into new fields cannot be achieved without matching investment in R&D.

c) Employees / firm ratio

Employees per firm ratio is an indicator of size of a firm. Many smaller firms do not have resources to invest in improving management, working conditions of their employees, R&D, safety, etc. Also large firms can be in better position to integrate the process (from concept to completion) than small specialized firms. Data on labor productivity in context of JCI indicates positive correlation between the size of the firm (by capital) and value addition per employee, i.e. higher measure for bigger firms[9].

d) JFCC's share

Japan Federation of Construction Contractors (JFCC) represents about 57 large AEC firms. Changes in JFCC's share of construction investment provides an indication of industry concentration. The top six Japanese steel companies account for 70 % of sales of the steel industry, but the top six construction companies handle only 10 % of the construction industry volume[10]. There may be some positive correlation between high market concentration in many manufacturing industries, their integrated production and high productivity.

The data for these four indicators for 1982 to 1991 was collected (or calculated) and is shown in Table 1. The percentage change for these indicators over the previous year can be seen in Fig. 3 & 4. The results are discussed below.

(2) Analysis of results

The results are analyzed in terms of impact of the initiative. Efforts are made to identify trends before and after the development of the vision. Some indicators do have a time lag between effort and result.

a) Labor productivity index

Labour productivity (as measured on productivity index) was stagnant during the late '70s and early '80s, but it has shown upward trend from its lowest point in 1983. Fig. 3 indicates that rate of change has stagnated after reaching a peak in 1987.

b) Construction R&D expenditure

A declining trend in percentage change of construction R&D during the early '80s is apparent in Fig. 3. The late '80s show rapid increase in R&D investment. One reason may be the clear emphasis on R&D in the vision, which indicated that the industry administration was supportive of R&D.

Table 1 Impact of strategic initiative on key indicators

Year	Produc -tivity Index (1975 =100)	R&D Expen- diture Billion Yen	Employ e e s / firm ratio	JFCC's Share of const. invest. percent
1982	96		10.59	
1983	87	101	10.52	21.2
1984	91	116	10.22	21.0
1985	93	111	10.21	21.6
1986	95	121	10.33	21.9
1987	106	128	10.43	22.6
1988	111	148	10.97	25.6
1989	112	185	11.33	28.2
1990		213	11.55	31.7
1991		205	11.72	30.9

Data Sources: 2),3) or calculated based on data.
Note : In 1984, the Ministry of Construction mentioned a fundamental shift in policy. In 1986, Construction industry's vision was published.

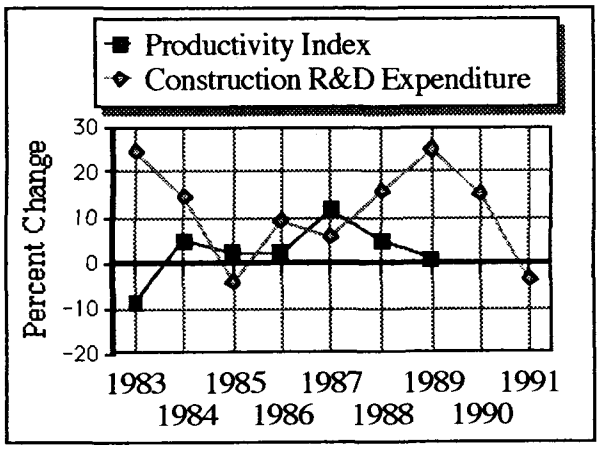

Fig. 3 Yr.-to-Yr. % change in key indicators - productivity and construction R&D

c) Employees / firm ratio

Rapid growth in number of construction firms by entry of many small firms during the late '70s was considered a reason for industry problems like demand supply imbalance, low profit margins and poor management. This is reflected by a decline in the ratio during the early '80s. Recognizing this problem, the vision clearly mentioned elimination of incompetent firms as part of the Structural Improvement Program. It seems that the initiative did succeed as shown by the marked increase in the ratio since 1986.

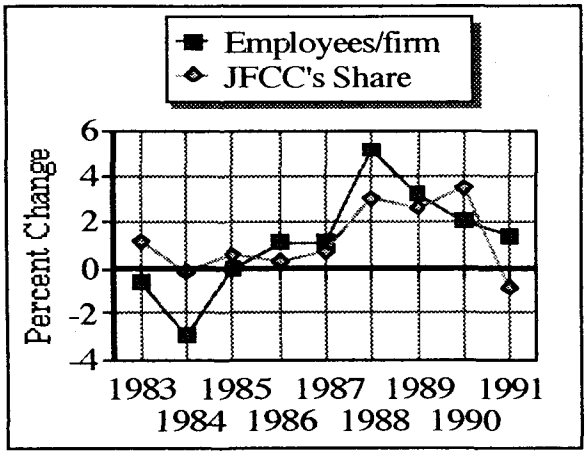

Fig. 4 Yr.-to-Yr. % change in key indicators - Employee / firm ratio and JFCC's share

d) JFCC's share

Data in Table 1 shows the rising share of JFCC members and hence significant rise in the market concentration during the late '80s. Some of that may be due to an increase in the number of members in JFCC, but about 10 percent rise in less than a decade appears quite significant.

A survey by Nikkei Architecture in 1989 indicated significant increases in **design-build** work. The rate of increase of more than 20 and 30 percent in 1987 and 1988 respectively (compared to previous year) was reported. It was mentioned that the share of design-build for big general contractors rose about 10 percent during the '80s to reach an average of 45 %. Design-build generally indicates integration of the construction process over its various phases and was consistent with the thinking of the vision.

The ability of an industry to assure a continuing flow of financing was indicated as a good indicator of its competitiveness[1]. The construction investment per firm (in constant terms) increased by 27 percent during 1983-87

and 47 percent during 1983-91 in Japan. The corresponding figure for CCI during 1983-87 showed an increase of just 9 percent. JCI appears to be quite successful by this criteria. JCI's heavy investment into its future (R&D and human resources) indicates of its strategic thinking, and may ensure its long-term competitiveness. However, its inability to reform the industry systems and deal with political interference may have adverse impact.

6. CONCLUSIONS

It is now more than 7 years since the vision of the construction industry for the 21st century was announced, a reasonably long time to see if that initiative produced the intermediate results expected. Evaluation of the impact of the plan on some key indicators does indicate positive results. However it is extremely difficult to check for statistically sound correlation between the plan and the results, because of our limited understanding of JCI and the lack of adequate data. Some factors other than the initiative may have contributed to positive performance on key indicators.

The initiative to improve the health of JCI has been unique in many respects. It appears to be significantly detailed, of broader scope and giving due consideration to implementation. It is very difficult to find such coherent initiatives in the construction industry in the North America. The initiatives in the construction industry in the North America are generally of limited scope. An effort to see the impact of a major initiative on some key indicators produced interesting results. One way to evaluate practical benefits of such an initiative is to monitor its impact on the relative competitiveness of the industry using a quantitative framework, over a time period. A framework, that can help evaluate the relative competitiveness of the construction industries in the North America and Japan comprehensively is being developed.

ACKNOWLEDGMENTS : Support from the Department of Civil Engineering, the University of Toronto and Shimizu Corporation during first author's stay in Japan is gratefully acknowledged. The writers would also like to express their gratitude to numerous colleagues in Canada and Japan, who shared their ideas about management practices and provided valuable supporting material for the research. The research presented here would not have been possible without support and encouragement of Prof. K. Nakajima and Prof. J. D'Cruz of the University of Toronto, Dr. N. Mine and W. Yamamoto of Shimizu Corporation and numerous friends in Canada and Japan.

REFERENCES

1) Revay, S. : A proposal to augment the competitiveness of the construction industry in Canada, the Canadian Construction Association, 1992.
2) Rodo seisansei no kokusai hikaku (International Comparison of Labor Productivity), Institute for Research in Productivity, Japan Productivity Centre, 1992.
3) Construction in Japan 1993, Japan Federation of Construction Contractors, Tokyo.
4) The World Competitiveness Report 1991, Prepared by IMEDE and The World Economic Forum, Switzerland.
5) Mintzberg H. and Quinn J. : The Strategy Process : Concepts and Contexts, Prentice Hall, NJ, 1992.
6) Service Industries : Construction; Industry, Science and Technology Canada, 1992.

7) Strassmann W. and Wells J. eds. : The Global Construction Industry : Strategies for Entry, Growth and Survival, World Industry Studies:7, Unwin Hyman, London, 1988.
8) Momaya K. and Mine N. : Strategic Management Practices in Japanese Construction Industry : An Introduction, Journal of Construction Management, Vol. VIII (II), NICMAR, Bombay, 1993.
9) Nikkenren Handobukku '93 (Nikenren Handbook), Japan Federation of Construction Contractors, Tokyo.
10) Walker A. and Flanagan R. eds. : Property and construction in Asia Pacific, BSP Professional Books, Oxford, 1992.

日本の建設業における戦略経営
ー戦略的イニシアチブの影響ー

モマヤ　キラン・セルビ　ケン

カナダと日本の建設産業は重要な過渡期にいると思われます。両方は独特の強みにもかかわらず２１世紀に向かって厳しい諸問題点もある。カナダ、日本と米国の相対的競争力を評価するのを目的とした本研究では、北米と日本の建設産業における戦略経営業務を明らかにしようとしている。本論は国際的に見た日本の建設業における戦略経営の方法論を論じたものである。産業を取り巻く環境と企業のインターフェイスを基にした研究の枠組みを説明し、日本の建設産業行政のバイブルともいえる戦略的イニシアチブを事例として行った分析の結果を示した。