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Trends in Construction Procurement Systems in Sri Lanka

Raufdeen Rameezdeen
Sadhana De Silva

Abstract

The procurement system is a key means through which the client creates pre-conditions for successful achievement of project specific objectives. The use and the development of procurement systems in any construction industry are affected by various factors. Thus it is interesting to discover different systems used in different instances. This paper presents the results of a questionnaire survey carried out among major contracting organizations in Sri Lanka on procurement systems to discern the trend from year 1977 to 2000. The paper also sheds some light on the underlying factors that affected the changes in procurement systems in Sri Lanka during the period concerned.

Introduction

The construction industry of any country, recognized as an economic regulator, plays a key role in its economy providing significant contribution to the national output. Its strong interdependence with other sectors of the economy has been established (Turin, 1973; Hillebrandt, 1984 ; Ofori, 1990). Thus, well being of the national construction industry is of paramount importance for economic development and long-term growth of ε country.

As the construction industry is an open system, which is very sensitive to change, its characterization throughout the world is determined by the operating external environment, which consists of subsystems such as economical, political, financial, legal and technological. This has lead the industry to be in a challenging state in addressing the changes forced by the subsystems in an efficient and effective manner. Thus, the construction industries in the world are striving to tackle these changes through the new and innovative ways of construction, efficient resource utilization and better organization of projects. Consequently, construction project procurement systems practiced in the industry have also been subjected to changes resulting in many newly innovated procurement systems that could be used to meet contemporary requirements.

This paper discusses the change of procurement trend in the construction industry of Sri Lanka, focusing on the building sub-sector from 1977 to 2000. The underlying factors that are responsible for the change are discussed with comparisons from other countries.

Methodology

The necessary data, among other information, were collected from top managers of M1 and M2 grade contractors in Sri Lanka. The method used for the collection of information was a written structured questionnaire. In addition to the questionnaire survey, few interviews were conducted among professionals to support the interpretation of findings. The purpose of the questionnaire was to unearth the procurement systems used in projects handled by the particular construction company from 1977 to 2000. The sample represents approximately 73% of the total population of M1 and M2 contractors operating in Sri Lanka. This is considered to be a good representation and these contractors together cover a major portion of construction work in Sri Lanka. Table 1 presents the profile of the sample in the questionnaire survey.

Table1: Profile of the Survey Sample

Grade	Survey Sample	Total
M1	12	15
M2	12	18
Total	24	33

Construction Procurement

The procurement concept in construction has been defined in many ways (McDermott, 1999; Love et.al. 1998). Masterman (1992) considered a construction procurement system to be "the organizational structure adopted by the client for the management of design and construction of a building project". In a more elaborative way, Love et. al. (1998) viewed procurement systems as "an organizational structure that arranges specific responsibilities and authorities to participants and defines the relationship of the various elements in the construction projects". In an attempt to develop a widely applicable definition, CIB W92 at its commission meeting in 1991, developed a working definition for procurement systems as "the framework within which construction is brought about ,acquired or obtained". Different procurement systems are used for different projects and

the correct choice may help avoid problems and be the key to the attainment of project specific goals. Researchers have come out with different criteria to distinguish different procurement systems. The following indicates the most common distinguishing criteria of procurement systems.

- Responsibility and the authority of the parties
- Relationship of different elements of the projects
- Required skills and capacities of the participants
- Performance criteria on cost, time, quality etc.
- Suitable project scenarios
- Suitable contractual arrangements and standard forms of contracts

Categorization of Construction Procurement Arrangements

NEDO (1983), Masterman (1992), Frank (1998) and many other authors on procurement have attempted categorizing procurement systems in many ways. Based on the recent literature, procurement systems are categorized into four broader classifications in this study.

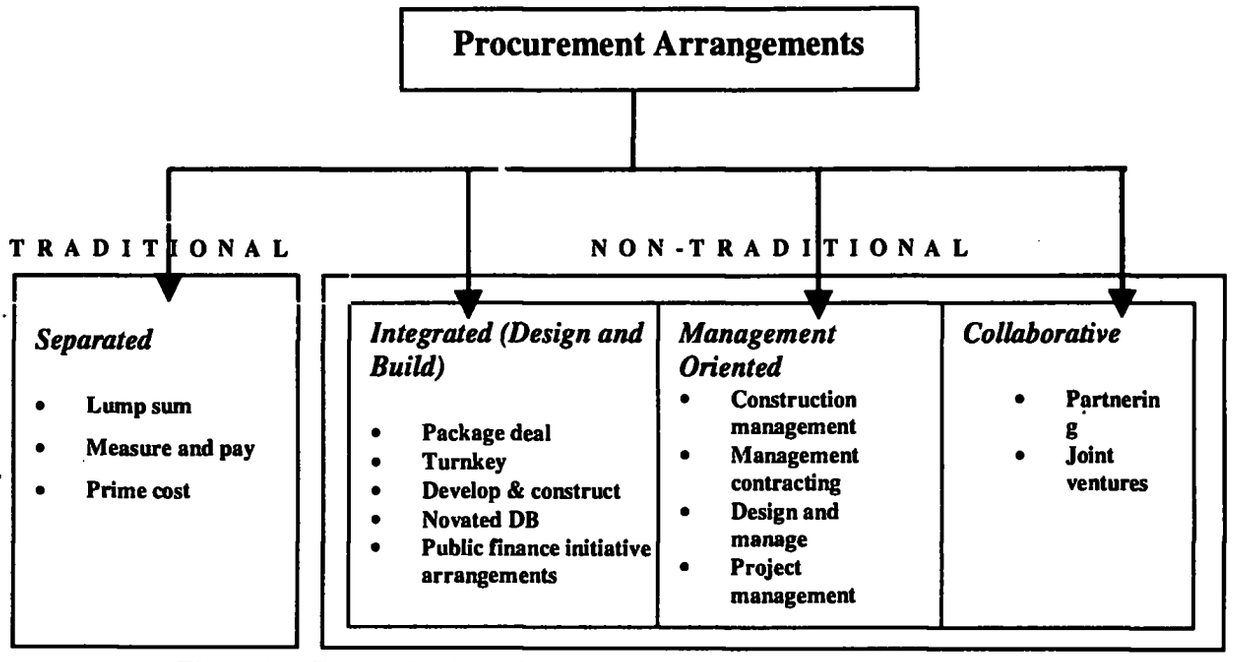


Figure1: Categorization of Construction Procurement Arrangements

1. Separated systems
2. Integrated systems
3. Management oriented systems
4. Collaborative systems

Figure 1 illustrates this classification with most common arrangements belonging to each category. A brief description of each system is given below.

Separated Procurement Systems

These systems are also known as 'traditional' systems. The key characteristics of these systems are the rigid separation of design and the construction process and lack of integration across this boundary (Cox and Townsend, 1998). In this system, client appoints an independent team of consultants on a fee basis, who fully design the project and prepare tender documentation upon which competitive bids are obtained from the contractors. The successful tenderer enters into a direct contract with the client and carries out the work under the supervision of the consultants. These systems offer minimal input of contractors to the design process (Rowlinson, 1999). The most common variants of the separated systems are the lump sum, measure and pay and prime cost.

In lump sum arrangements, contract sum is agreed before the construction starts and risk is very high to the contractor. These contracts render maximum price certainty before the start, provided that client's requirements are fully specified (Turner, 1997). This system is becoming increasingly popular among private sector clients in Sri Lanka.

Measure and pay contracts are generally used where the work has been substantially designed but final details have not been completed.

The tender is based on drawings, specifications and approximate bill of quantities. The contractor is paid according to the amount of work done as measured after the physical completion.

Even though, the overall time is shorter with this method, lack of price certainty at the contract stage remains a main disadvantage. In Sri Lanka, majority of public works are procured using this method. Transparency and accountability are the main driving forces for favouring this method over others in the public sector.

Prime cost contracts include three main approaches, i.e. cost plus contracts, target cost contracts and fee contracts. Prime cost contract result in the contractor receiving only what is spent plus an agreed amount to cover profits. These methods are used where there is an inadequate definition of work at the time of tender, during high inflation and the project is extremely complex or unquantifiable risks are involved. The absence of tender sum at the beginning and no contractual commitment of the contractors to reduce the final cost are considered as the major disadvantages of these systems. Prime cost arrangements are the most popular method in the informal sector of the Sri Lankan construction industry. Informal sector accounts for a considerable amount of workload in the country mainly from the housing sub-sector.

Integrated Procurement Systems

These systems are also identified as Design and Build systems. They simply mean that one contracting organization offers to undertake the sole responsibility of design and construction of a project. Although the contractor assumes the overall responsibility for project delivery, the client may appoint an independent adviser to monitor quality and cost (Cox and Townsend, 1998).

There are some variants to the integrated procurement system, which have been introduced to bring more competition into the process and to achieve the balance of allocation of risks (Valance and Akintoye, 1996). The range of services offered by the contractor varies greatly with these variants (Frank, 1998). With some variants contractors find sites, arrange mortgages, sales and finance. Some even operate the constructed facility in addition to design and construction. The common variants are package deal, tumkey, develop and construct, novated design and build and concession contracts such as BOT, BOO, BOOT etc.,

It has been widely accepted that closer integration of design and construction is a benefit of the system (McDermott, 1999). Further, a number of studies have found that these systems offer shorter overall time when compared to separated procurement systems. Also, overall economical project solutions are found to be possible with these systems. However, aesthetically important buildings are not generally recommended to procure through this method. In Sri Lanka integrated procurement systems are used mainly for industrial buildings. It was found that they are mainly of prefabricated type. Almost all 200 garment factory buildings developed during President Premadasa's period were procured using this method.

Management Oriented Systems

The basic feature of these arrangements is the separation of management function from design and construction. With these arrangements client enters into a contract with an external organization, which is responsible for management and coordination of design and construction of the work. The common variants to these systems are management contracting and construction management.

The overall design and construction time is generally shorter with these systems (Turner, 1997). Varying ideas on cost reliability of the arrangements are reported by many researchers (Lam and Chan, 1994). Technologically complex buildings and large projects are recommended for these systems. In Sri Lanka, only few projects have been procured through this method and all of them are very complex and large-scale building projects.

Collaborative Systems

The basic principle of these systems is the collaboration between two or more parties to achieve successful project objectives through fair dealings, commitment, and shared investment. Various forms of joint ventures through combine investment of capital and expertise to undertake the works are also considered as collaborative procurement systems (de Valence and Huon, 1999). Partnering is the latest collaborative system that has enjoyed an increasing attention globally. Crowly and karim (1995) stated that partnering is a decentralized organizational structure that allows better flexibility in meeting specific project needs through increased organizational competence. The key attributes associated with partnering are trust, shared vision and long term commitment of the parties involved. Some of the advantages of partnering according to Frank (1998) and Matthews (1999) are reduced exposure to litigation, low risk of cost and time overruns, non adversarial win-win attitudes, better quality products, quicker start and improved efficiency of human and other resources. Nevertheless, the lack of commitment by all parties, cultural issues, higher risks involved and loss of control over dishonesty may be seen as common disadvantages of partnering (Matthews, 1999).

CIB (1997) believes that this is the most suitable approach for high-value high-risk construction projects. In Sri Lanka, Collaborative systems have just started to emerge. It was found that these are also due to the involvement of international contractors in Sri Lanka. International contractors form joint venture arrangements with local counterparts or existing international contractors when entering the Sri Lankan market.

Trend of Procurement Systems Use in Sri Lanka

Table 2 and Figure 2 provides a summary of the results obtained from the questionnaire survey for 5 panels representing the period 1977-2000. The results clearly highlight the dominance of separated procurement system throughout the period. As such, only the separated system was divided into its variants in the analysis. However, it can be noted that the share of separated system as a whole is diminishing.

It has gone down considerably in certain periods (particularly during 1982-86 and 1992-96) paving way for the implementation of other systems.

The second most popular system in Sri Lanka is the integrated procurement system. It has recorded a usage rate of 20-30% over the years. Management oriented systems were used only in few projects. It records only 1% throughout the study period. It is still pre-mature to comment on the popularity of collaborative system because it has just started to emerge in Sri Lanka.

Within the separated system, measure and pay has the highest share in the range of 50-65% of the total. The lump sum system has a varying share of between 7-12% of the total. There is a clear decline of prime cost as a procurement system in large building projects. However, it is the most favored system in the informal sector of the industry.

Factors Affecting the Change in the Use of Procurement Systems

As the industry's characterization is determined by the external environment (political, economical, technological, financial etc.,) in which it operates, the development and the use of project procurement systems in any construction industry are affected by such environmental factors. These environmental factors influence the industry in various ways thus determining the procurement shares and trends. How the influences of those factors are directed towards procurement trends are discussed below.

Economic and Market Aspects

Cyclical demand in the construction industry is caused by the economic status of the country. Moor (1984) highlighted the decrease in construction work load in 1970's, due to the recession in UK, which resulted in contractors diversifying into areas of design and management to ensure adequate work for survival. Such situations have resulted in the growth of new arrangements such as design and build and management contracting in UK construction industry. Further, in UK, the oil crisis in 1970's which resulted in high inflation coupled with high borrowing rates made the client realise the importance of construction time and gave rise to fast track project procurement arrangements like management contracting.

In examining the share of project procurement arrangements used from 1987 – 1997, Ladenpera et.al. (1999) stated that the changes in economic conditions may have had an impact on project procurement arrangements used in Finland. In Finland, economic boom at the end of 1980s was followed by a sharp decline of over 50% of the construction workload within three years. In 1996-97 volumes started to grow again. The traditional method seemed to be the choice especially in the recession in early 1990s with a low market structure.

As the economy revived in 1996-97, the shares of design and build and management oriented procurement systems increased possibly due to the need for shorter project duration (Ladenpera *et. al*, 1999).

In Sri Lanka, with the market changing from closed to open economy in 1977, there has been a tremendous increase in construction workload (see Figure 3). This had resulted in a considerable increase in the use of non-traditional forms of construction project procurement arrangements. The share of non-traditional procurement systems increased from 23% to 32% in the 1982-86

Table 2 : Trend of Construction Procurement Systems Used in Sri Lanka

Procurement System	% of use (avarage)				
	77-81	82-86	87-91	92-96	97-00
Separated System	78	68	71	61	77
• Measure and pay	55	50	58	50	64
• Lump Sum	12	10	8	7	10
•Prime cost	10	8	5	4	3
Integrated systems (including Design and Build, Turnkey and package deal)	22	31	28	35	21
		1	1	1	1
Collaborative Systems	0	0	0	3	1

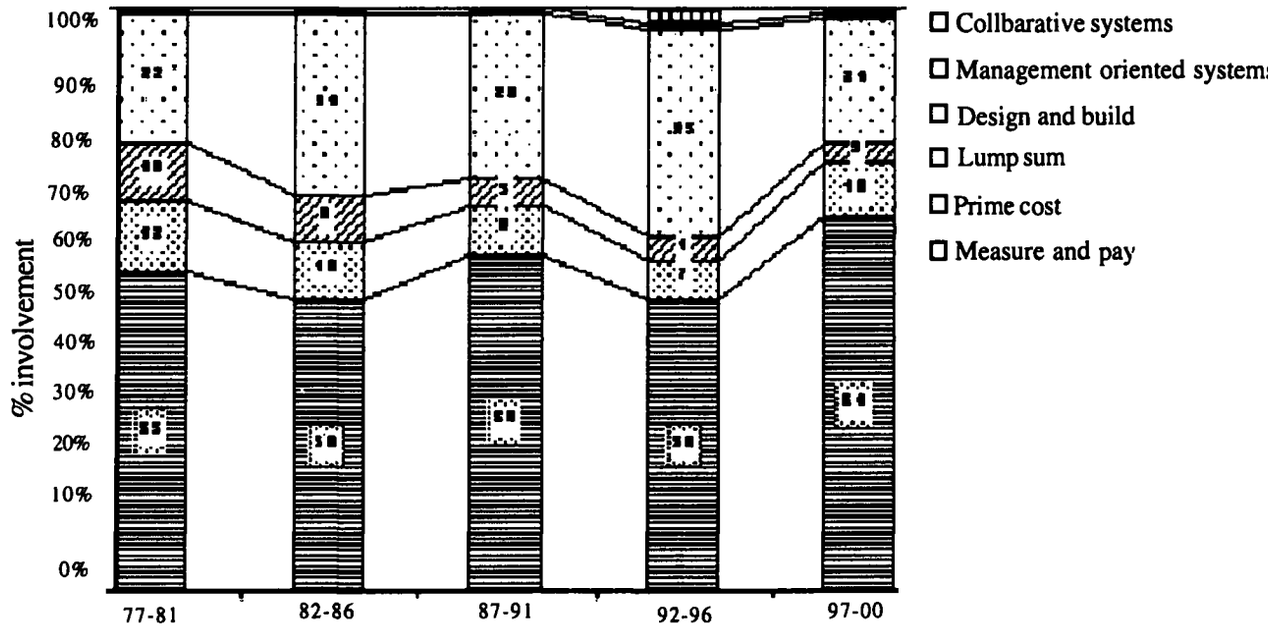


Figure 2: Trend of Construction Procurement Systems Used in Sri Lanka

period. Such a change was due to the burning requirement for faster implementation of projects and increased involvement of foreign contractors and consultants in the industry. Similarly, a rise in non-traditional systems could be observed in the 1992-96 period. The share has gone up to 39%. In both these periods, design and build constitute the largest share among the non-traditional systems. The increase of design and build is mainly due to the increase in industrial activity in the country. The growth of manufacturing sector as shown in Figure 4 might have resulted in an increase in the share of design and build procurement system, especially during 1992-96 period.

Technological Aspects

New technological improvements and innovations in engineering have increased the complexity of construction. This led the industry to seek improved project organisation procedures and practices in order to be in line with those technological shifts. Thus, within this context, project procurement arrangements have been identified as one of the areas that need to be re-appraised (Kumaraswami, 1994).

Professional advisory programmes towards best practices are evolving. UK's Construction Best Practice programme is an example. Construction Industry Cost Effectiveness (CICE) Project study in USA and Construction 21 study in Singapore are some other examples. Particularly, decisions pertaining to project procurement arrangements are seen as more important to the construction industry development. An increased amount of research work has been undertaken in this area. Outcomes of such studies have led the construction professionals to increase the productivity and harmony of the industry, integrating their knowledge, experience, ethical attitudes and character in the services offered to clients. Further, new roles for e.g. project manager and procurement manager have evolved through the identification of higher purposes of professionalism. The formation of the Institute of Quantity Surveyors Sri Lanka in 1982 has contributed to identify and popularise various alternative procurement systems in the Sri Lankan construction industry.

Government Policies

The government is an important participant in the construction industry of every country, playing the role of a major client, regulating authority and the administrator of the development of the industry (Ofori, 1990). de Valance and Huon (1999) and many other researchers (Mustapha, *et. al.*, 1994; Mukalula, 1996; Azis and Ofori, 1996) have stated that changes in state regulations and policies have made an impact on the procurement trend. Further, some governments directly influence the project procurement through their policies. It is the stated policy of the government of Sri Lanka to procure future investments for new infrastructure projects through the forms of BOT or BOO. By such policies, government expects to provide solutions to the problem of insufficient funds for investment (Presidential Policy Statement: Sri Lanka, 1996).

Government being a major client ,creates an impact on the construction market, thus indirectly regulating the project procurement practice in a country. In Sri Lanka, the majority of public works are procured using measure and pay system. The reluctance of the public sector to use other non-traditional procurement methods is due to the bureaucratic barrier created by financial regulations and administration regulations of the country. As a

Figure3: Growth rate of construction value added at constant 1982 prices

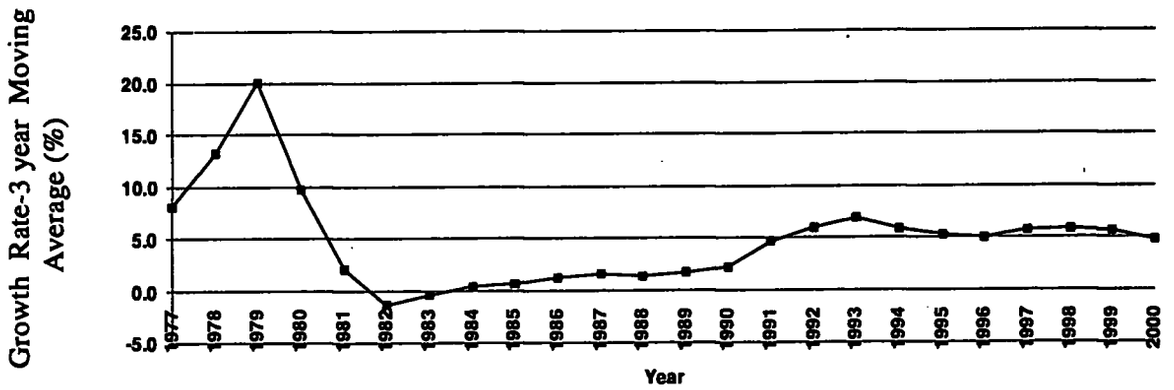
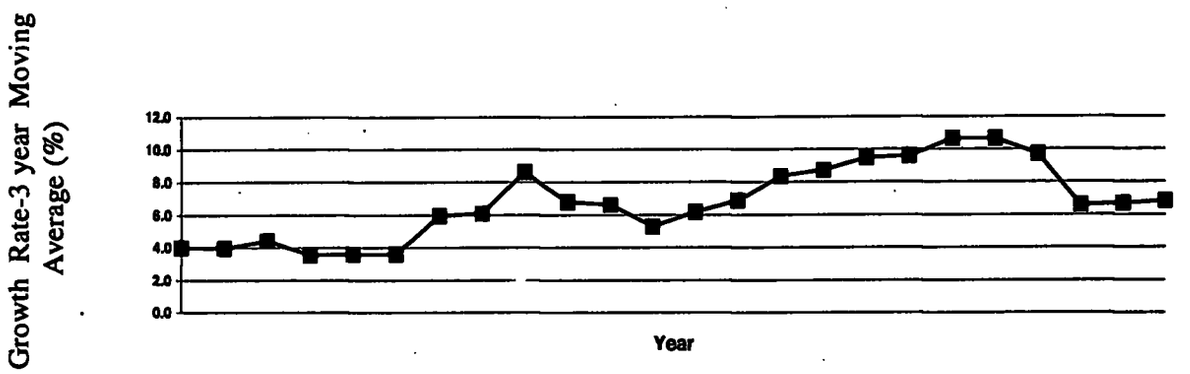


Figure 4: Growth rate of construction value added at constant 1982 prices



consequence, the construction regulatory agency in Sri Lanka, the Institute for Construction Training and Development (ICTAD) has only considered measure and pay until recently in developing guidelines . for the industry. Very little effort was made by the ICTAD to promote other procurement methods in Sri Lanka. Only in 2001 ICTAD published a guideline called "Standard Bidding Document for Procurement of Works – Design and Build Contracts ". This is the first guideline to be published by the ICTAD for an alternative procurement arrangement. This has further strengthened the hold of measure and pay as the dominant procurement method in Sri Lanka.

Financial Aspects

Most developing countries frequently obtain finance for major development projects through development aid funds. Both bi-lateral and multi-lateral aid constitute a major portion of the development budget in Sri Lanka. These lending institutions essentially safeguard their interests by dictating the methodologies that the borrowers should follow. The procurement route is one such area where their advice is focused. For example, if the project is funded by World Bank or Asian Development Bank, the procedures for procurement will be according to their whims and fancies. Thus, the issue of client's choice in the procurement of major construction projects becomes secondary to the perceived benefits of financial arrangements. As such, it was found that the procurement concept is less relevant to a country like Sri Lanka where majority of development projects are funded by foreign aid. It is also observed that many arrangements for transactions between client, contractors and financiers have evolved in recent years. In a situation where client has no financial resources, projects are implemented through project procurement arrangements such as BOT and BOO. These have resulted in new financial structures and also have led to a change in project procurement practice in the construction industry.

Socio-cultural Aspects

Hofstede (1984) (*of.* McDermott, et.al. 1997) has maintained that the concept of culture is a prime driver of both individuals and organizations. Trust and institutions are two major dimensions related to culture. Latham (1994) accepted 'trust' as the gatekeeper to any real progress in improving procurement and contractual relations in UK construction industry. His report attempted to rebuild the trust in UK construction industry through the advocating of partnering and encouraging restructuring of client, contractor, subcontractor, supplier and consultant institutions. The importance of institutions in establishing procurement policies and practices are

well established by many researchers (Ng, 1994; Ofori and Pin, 1996; Azis and Ofori, 1996). As discussed above, the dominance of measure and pay in Sri Lanka is mainly attributable to the institutionalising of this procurement method by public sector agencies and virtual negligence of other methods over time.

Analysing the relationship between procurement system and clients interests in both countries, Saito (1994) made clear that procurement difference in UK and Japan is based on cultural differentiation. Western organisations may need to learn to work with Asian professionals by accepting their cultural composition (Matthews *et. al.*, 1999). This is a procurement system issue that the system itself must be able to deal with and adapt to. In examining the organizational structure of Japanese contractors operating in Sri Lanka. Rameezdeen and Welaratne (2001) found that all Japanese contractors have entered the Sri Lankan market through joint venture procurement arrangements. Joint venture provides an opportunity to reduce the cultural gap between the international contractor and the host nation, in addition to numerous other advantages to the newcomer. Even a minute share of collaborative systems during periods 1992-96 and 1997-2000 (see Table 1) are due to the involvement of international contractors in Sri Lanka.

Conclusions

This paper highlighted the dominance of separated procurement systems in Sri Lanka from year 1977-2000. This is mainly due to government influence on the construction industry of Sri Lanka. Government as a major client and the regulator neglected and created a barrier for the development of alternative procurement methods. Economic growth has favoured some of the alternative methods to emerge in Sri Lanka. Design and Build is one such method developed mainly due to the industrial growth of the country.

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