PERFORMANCE MEASURES FOR THE MALAYSIAN CONSTRUCTION INDUSTRY DEVELOPMENT BOARD

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The structure and roles of the Malaysian Construction Industry Development Board (CIDB), as the lead organisation responsible for the implementation of the Construction Industry Master Plan 2006-2015, has become even more critical to the success of the master plan and the construction industry in general. Each division of the CIDB has taken on the responsibility of spearheading various strategic thrusts in collaboration with other government agencies and industry partners. The performance measures of the CIDB have been identified, and a set of ten has been proposed for reporting to the government and stakeholders. The roles and responsibilities of each division and its corresponding performance measures are also defined. The concept of cascading these performance measures is introduced to ensure organisational alignment for all its objectives and initiatives.

Keywords: benchmarking, corporate planning, corporate strategy, economic development.

INTRODUCTION

The Construction Industry Master Plan (CIMP) (CIDB 2007) has painted a vision of developing the Malaysian construction industry into an innovative, sustainable, professional, profitable and world-class industry by 2015. A strategic roadmap for the Malaysian construction industry to meet the challenges of international competition, to seize the opportunities presented in the global markets and to contribute to nation building was presented during the launch of the CIMP in December 2007. From the vision and mission of the industry, the plan has identified eight critical success factors, seven strategic thrusts and at least twenty one specific recommendations that are imperative to the success of the mission.

The structure and roles of the Construction Industry Development Board (CIDB), as the lead organisation responsible for the implementation of the master plan, has become even more crucial to the success of the master plan in particular and the construction industry in general. Each division of the CIDB has taken on the responsibility of spearheading various strategic thrusts in collaboration with numerous government agencies and industry partners.

The aim of this exercise is to design and define a set of performance measures for the CIDB in its efforts to implement the construction industry master plan. The CIDB was reorganised in 2007 into four functional divisions: management services, contractor

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and construction personnel development, construction business environment development, and technology and innovation development. The office of the chief executive takes on the overall responsibility of implementing these performance measures. Table 1 links each division to the strategic thrusts that the division will be responsible for, including the other government agencies and industry partners are jointly responsible for the successful implementation of these thrusts.

Table 1: Four functional divisions and their corresponding strategic thrust responsibilities

CIDB Divisions	Strategic Thrusts	Other Agencies
CEO's Office	Overall management responsibility	
Management Services Division	Responsible for internal CIDB operations and management	
Construction Business Environment Development Division	1. Integrate construction industry value chain to enhance productivity and efficiency 7. Benefit from globalisation, PERFORMANCE MEASURES FOR THE MALAYSIAN CONSTRUCTION INDUSTRY DEVELOPMENT BOARD - Toong Chan and Gerald Sundaraj including the export of construction products and services	Public Works Department (PWD), Ministry of Housing and Local Government (MHLG), Malaysia External Trade Development Corporation (MATRADE), Ministry of International Trade and Industry (MITI), Professional Services Development Corporation (PSDC)
Contractor and Construction Personnel Development Division	2. Strengthen the construction industry image 4. Promote and enforce use of skilled labour	Pusat Khidmat Kontraktor (PKK), Public Works Department (PWD)
Technology and Innovation Development Division	3. Foster a quality and environment-friendly culture 5. Continuously innovate construction processes and techniques 6. Leverage on ICT in the construction industry	Dept. of Occupational Safety and Health (DOSH), Ministry of Housing and Local Government (MHLG), (Dept. of Standards Malaysia (DSM), Centre of Construction Research (CREAM), Association of the Computer and Multimedia Industry (PIKOM)

MEASURING PERFORMANCE

Kagioglou *et al.* (2001), Bassioni *et al.* (2004) and Costa *et al.* (2006) have reviewed and proposed performance measurement frameworks for the construction industry which can be implemented at the project, company or industry level where the measures for the project perspectives are sub-sets of the measures for the company performance, and the aggregation of company measures evolve into measures for the industry. Kagioglou *et al.* (2001) suggested a framework for an organisation in the construction industry by adding the 'project' and 'supplier' perspectives. National performance measurement initiatives have also been implemented for the construction industries in the UK in response to the Latham and Egan reports (DOE 1994, DTI 1998), and in Chile, Denmark, New Zealand and Canada (Costa *et al.* 2006, BEC 2006, NZCEA 2007, Rankin 2008).

Although there is substantial experience in designing performance measures for manufacturing and service organisations, and recently for the construction industry, there is limited experience in designing and defining performance measures for an industry organisation such as an industry development board with responsibilities to promote and stimulate the development, improvement and expansion of the construction industry, and generally to represent the industry to the government and the public. In its role as a government agency with responsibilities to register and regulate the construction industry, factors such as customer satisfaction, regulatory compliance and operational efficiency will be the primary concern. However, this exercise will focus predominantly on its responsibilities as the lead implementer of the industry master plan and thus derive and align the performance measures directly to the strategic thrusts of the plan.

Design Phase

Traditionally businesses have measured their performance in financial terms: mainly profit, turnover, and return on investment. These financial measures of performance have been the sole measures of an organisation's success for many decades. Performance measurement that has been based around financial measures has been deemed to be out of step with recent changes in many industries, particularly relating to new technologies and increased competition. Financial measures (which summarise the results of actions taken previously) are nowadays supplemented with non-financial measures (of customers, internal processes, and learning and growth) to capture the indicators of future organisational performance.

The design of the performance measures for the Malaysian construction industry based on the Balanced Scorecard approach has been completed recently (Chan, 2009). These performance measures are reproduced in Table 2 to illustrate the broad industry metrics that have been ascertained to be relevant to the stakeholders. Instead of replicating the four perspective of the Balanced Scorecard in this exercise, the framework for designing the performance measures was based on fulfilling the seven strategic thrusts defined in the master plan. The CIDB has identified and initiated more than sixty initiatives from the seven strategic thrusts to fulfil its commitment to the stakeholders of the construction industry. The performance measures for the CIDB will be significantly different from those of the industry: financial goals will not be directly relevant; its measures will mainly focus on improving procurement methods, improving contractor performance, integrating the planning and approvals process, defining and assessing product quality, providing training, funding R&D and increase ICT usage, enhancing occupational safety and health practices, and creating opportunities for export of construction services. The first step towards designing the performance measures was by examining the strategic thrusts that each division was responsible for. The measures were derived directly from the strategic thrusts to reflect these requisite outcomes. Numerous brainstorming sessions were organised where the division managers and researchers jointly evaluated performance measures from other industries or created specific measures for each goal. Each division of the CIDB was fully engaged in the design phase and was encouraged to discuss their respective roles in team project meetings.

Table 2: Performance measures for the construction industry

BSC Perspective	Principles	Performance Measures
Financial Perspective	Grow profits Improve productivity Improve profitability	Annual construction demand from public and private sectors Ratio of value of contracts awarded to Malaysian contractors vs foreign Total annual value of overseas construction projects Productivity – Value-add per worker Productivity growth rate Profitability – Company Return on equity
Customer Perspective	Improve project performance Improve quality of product Improve approvals process Improve contractor performance Improve quality of service	Predictability Cost – Design/Construction/Project Predictability Time – Design/Construction/Project QLASSIC score Time for Approvals (weeks) Performance Ratings Client Satisfaction – Products and Services
Internal Perspective – Innovation – Operations – Occupational Health and Safety	Increase innovation Increase use of new technology Improve labour productivity Improve quality processes Increase environmental awareness Improve OHS performance	Construction R&D per RM1m of project value Number of patents registered locally Percentage of IBS/pre-cast/pre-fabrication Labour productivity Labour productivity growth rate No of companies with ISO9001 certification No of companies with ISO14001 certification No of companies with OSHMS/OHSAS certification Number of accidents Employee fatality
Learning and Growth Perspective	Improve skills Reduce staff turnover Increase training Increase ICT spending	No of workers accredited No of supervisors accredited Staff turnover Number of training days per worker per year Total ICT spending of the construction industry Inputs from the ICT industry to the construction industry

Define Phase

Parmenter (2007) defined three types of performance measures: key results indicators (KRI) which describe how an organisation has performed, performance indicators (PI) which describe what an organisation has to do to increase or improve performance, and key performance indicators (KPI) which describe what an organisation has to do to increase or improve performance dramatically. The common characteristic of result indicators is that they are the result of many actions, and give a clear picture of whether an organisation is progressing in the right direction. They do not, however, inform management what they need to do to improve these results. Thus, result indicators provide information that is ideal for presentation to shareholders or stakeholders. On the other hand, key performance indicators represent a set of measures focusing on those aspects of organisational performance that are most critical for the current and future success of the organisation.

Key performance indicators shall have the following characteristics (Parmenter 2007): non-financial measures, measured frequently, acted on by the CEO and senior

management team, clearly understood by all staff and the necessary corrective action, ties responsibility to an individual or team, significant impact, and positive impact.

Although Kaplan and Norton (2004) recommended no more than 20 key performance indicators, it is now commonly suggested that many organisations should have no more than 10 key result indicators, 10 key performance indicators and up to 80 performance indicators. Each strategic thrust and its associated recommended actions were examined in detail to define the performance measures based on the seven characteristics above. The measures for the CIDB must tie the performance of each division to the success of the strategic thrust under its portfolio. This is best illustrated by examining Strategic Thrust 4 which is to promote and enforce the use of skilled labour. The industry aims to ensure that more than 95% of all workers are trained and accredited to a 'skilled' level by 2015. This initiative requires the CIDB to develop the necessary training modules for the various trades, provide training for unskilled workers (by the CIDB training centres or other accredited training centres), and to register and accredit these workers. The proposed measures for the CIDB for this strategic thrust are the number of workers trained, accredited and registered, and the number of youths and school leavers trained in the various trades annually. These measures are chosen as the responsibilities for the provision of training, registration and accreditation lie completely within the ambit of the CIDB.

On the other hand, the role of the CIDB for the initiative to improve quality of workmanship on construction projects is dependent on the construction companies' willingness to participate in the quality assessment programme. The CIDB has previously developed the QuaLity Assessment SyStem In Construction (QLASSIC) to measure and evaluate the quality of workmanship of construction work based on an approved standard but currently attract few participants. The performance measure in this instance will be for the division concerned to increase the number of participating contractors and therefore increase the number of projects assessed to ensure that this quality assessment system is fully integrated into a contractor performance system. The efforts to increase participation may include the provision of a sufficient number of trained assessors, clear and verifiable quality standards, efficient assessment procedures, and communicating to all stakeholders the advantages of having a high QLASSIC quality score in marketing their products and services.

Other initiatives such as marketing the industry in global markets rely on the ability of the CIDB in organising and facilitating trade visits and government-to-government contacts to explore the potential for international projects. It is important that the chosen measure for this initiative appraise the efforts of the CIDB and its effectiveness in delivering results. Although it may be convenient to measure the number of trade missions to foreign markets, the number and value of projects won is the ultimate measure for the industry. It may be appropriate to measure the number of overseas trade missions initially, but efforts must be made to adopt the number of tendering opportunities created through these missions as the performance measure in the near future. Defining this particular measure has indicated the need for performance measures to be continually reassessed and refocus when necessary. The list of proposed measures for the CIDB as presented during a project meeting is tabulated in Table 3.

Table 3: Proposed performance indicators for the CIDB

Strategic Thrust	Principles	Measures
1. Integrate construction industry value chain to enhance productivity and efficiency	Improve procurement methods	No of projects adopting partnering as a procurement approach No of disputes resolved through adjudication Regular and timely provision of information on price trends of major construction materials Dissemination of information on construction prospects and forecasts
2. Strengthen the construction industry image	Improve contractor competence Improve contractor ethics	No of contractors trained No of participants in 'Integrity Courses'
3. Foster a quality and environment-friendly culture	Improve quality of products Improve quality assurance processes	No of projects assessed using QLASSIC No of ISO9001 certified contractor
4. Promote and enforce use of skilled labour	Improve skills	No of construction workers trained / registered / accredited No of youth and school leavers trained
5. Continuously innovate construction processes and techniques	Improve construction technology	No of new technology identified, promoted and encouraged Annual R&D expenditure No of R&D projects awarded, and commercialised No of projects using IBS No of IBS products and manufacturers registered
6. Leverage on ICT in the construction industry	Increase ICT usage	No of portal subscribers, page-views Percentage of proposed portal content filled
7. Benefit from globalisation, including the export of construction products and services	Increase participation in foreign projects	No of specialised construction missions undertaken No of quality audits on overseas projects undertaken by Malaysian contractors
Monitoring of CIMP (other functional responsibilities of the CIDB are not addressed in this exercise)	Improve implementation efficiency	No of CIMP initiatives on-going / new / completed / dropped

Determine Targets

The targets for the organisational performance measures were derived based on the metrics required by the industry stakeholders; for example, the number of personnel trained per year must necessarily be a function of the number of personnel yet to be trained and the number of years within which this task has to be completed.

Validation

The measures in Table 3 were reviewed by the management of the CIDB to ensure that all seven strategic thrusts were adequately covered, the measures effectively describe the progress in each area of interest, the measures are clearly defined, the methodology to obtain the necessary data is in place, and that the targets are realistic.

KEY PERFORMANCE INDICATORS

Each division has identified a number of key performance indicators (KPIs) from their respective list of performance measures which are crucial to the success of the strategic plan. These KPIs will be utilised as internal performance reports from each division to management on a monthly basis. A summary of ten KPIs as shown in Table 4 was identified from this list of divisional performance measures and will form the basis of a KPI report to their governing board and to the government. It is essential that measurement be timely as the reporting has been found to drive project and task completion in many performance measurement initiatives.

DISCUSSION

Although the ten KPIs shown in Table 4 are suitable for reporting to management, these do not indicate how to improve performance within the organisation. The ten measures to be reported may be more accurately described as Key Results Indicators (KRIs) as they are the result of many actions. As these measures are reported once in two months to the governing board, the impact on organisational performance is limited. Developing a governance report, consisting of up to ten measures of these KRIs and the remaining measures of the performance indicators in Table 3 for management is recommended with a reporting period of either monthly or preferably, fortnightly for greater impact on improving performance.

Table 4: Key performance indicators

Divisions	Measures	Annual Targets
1. Construction Business Environment Division	No of publications in the construction sector	18 per year
	No of construction missions to prospective markets overseas	3 per year
2. Technology and Innovation Division	No of projects assessed using QLASSIC	40 projects per year
	No of new technology identified and promoted	5 projects per year
	No of R&D projects awarded	5 projects per year
	No of IBS products and manufacturers registered	30 products per year
3. Contractor and Construction Personnel Development Division	No of contractors trained	7,500 contractors per year
	No of construction personnel trained	105,600 personnel per year
	No of construction personnel accredited	12,000 personnel per year
	No of youth and school leavers trained and accredited	13,000 personnel per year

Given that most organisations will consist of several separate divisions with diverse functions, the organisation needs a tool that will unite everyone in the purpose of improving performance and ensure that all are moving toward the same overall goals. Cascading these performance measures down the line from the top KPIs to each separate division, and then to each section, and eventually to each and every employee, will ensure goal alignment at every level. The purpose of cascading the KPIs is to give every employee the opportunity to display how their day-to-day actions can influence the achievement of the organisations key strategies. This is what the idea of cascading is all about – creating a line of sight from the employee on the shop floor back to the organisation's long-term strategies. The cascading framework for these performance indicators can be found in Niven (1999). The measures become more specific with each level of cascading. However, the linkage to the overall objective remains intact.

Following on the earlier example of the "Promoting and enforcing the use of skilled labour" initiative from Strategic Thrust 4, the target is to have an additional 105,600 construction workers trained as skilled workers. This KPI can be cascaded down to the Contractor and Construction Personnel Development Division with the development of four measures: i.e. the number of training centres, number of qualified trainers, number of courses and new courses under development to support this KPI. This is what the Division has to provide to ensure that the Organisational KPI is achieved. At the training centre, the trainers can clearly understand how they can contribute to the organisational and divisional measures by ensuring that they provide sufficient training places, the number of participants passing the necessary assessments, and the quality of training provided to fulfil these objectives.

Cascading these measures is critical to ensure that everyone at the CIDB understands how they may contribute to the achievement of the organisation's overall strategies. Therefore, a very aggressive schedule for cascading the high-level KPI must be started immediately. The single most important feature when cascading the performance measure is to provide clear guidelines and accountability. Each employee must be informed on their responsibilities and timelines (what is expected of them, and when) and use a consistent template throughout the organisation. Each key point must be linked to an objective from the scorecard above, and determines directly how each employee contributes to the strategies of the organisation.

The reporting period of these measures shall be as frequent as reasonably possible to ensure that corrective action is taken if the targets are not met. A suggested reporting period for the Units are weekly, followed by fortnightly reporting by the Divisions, with a monthly report prepared for review at the management level.

CONCLUSION

A set of organisational performance measures for the CIDB has been designed, defined and validated based on its responsibilities to deliver the strategic outcomes of the Construction Industry Master Plan. The performance measures for each division have been determined and are directly linked to each of the seven strategic thrusts in the master plan. Ten performance indicators have been proposed for reporting to the government on a quarterly basis - these are more accurately known as key results indicators as these are reporting past performance and have been commonly accepted that these cannot provide an indication of future performance. Another set of performance indicators, which shall be reported monthly to the top management shall form the basis of a management system to report and review performance.

This performance measurement initiative must be part of the management system, which reviews performance regularly and decides on remedial actions if targets are not met. An efficiently designed set of performance measures will correctly focus effort on 'achieving results' as opposed to 'efficiently carrying out various tasks'. Performance measurement is expected to change the way in which organisations operate, be they for-profit organisations or an industry board like the CIDB.

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