

MEASUREMENT AND IMPROVEMENT OF ORGANISATIONAL  
PERFORMANCE USING MODEL OF PERFORMANCE ANALYSIS

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Dedicated to my beloved father Hj.Mohammad Bin Hj. Bajuri (who has passed away in 2002) and to my beloved mother Hjh. Asiah Bte Piee where without their love, guidance, encouragement and prayers throughout my life, I may not be able to reach this success. May Allah bless them with love, rahmah and peace.

## FOREWORDS

God (Allah) has created human as the *khalifah* as stated in the Al-Quran as follows:

*“ He is the One who has made you the inheritors of the earth and raised some of you in ranks over others so that he may test you in what he has given you”*. Al An’aam, Verse 165, M. Farouqi (1997 ). And, Allah has given human with ‘*aql* (an intelligent) to lead the world and to create technology as illustrated in Al-Quran as follows :

*“ And of His signs is the showing of the lightning in which there is fear as well as hope, and He sends down rain water from the sky and with it gives life to the earth after its death; surely, there are sign in this for those who use their common sense. ”* Al Ruum, Verse 24, M. Farouqi (1997). The term “ common sense ” is referred as the intelligent or now known as “ the human capital ” that human has to create technology to face challenges to live in this world.

This research has looked into the insights as to align human capital in order to improve performance where the author has developed tools for performance analysis such as “ TEPQ ANALYSIS ”, “ ORGANISATION MATRIX ANALYSIS ”, and “ THE HUMAN CAPITAL MODEL”.

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## ABSTRACT

Organisational performance is strongly dependent on four important parameters namely human capital, finance, facilities and good management practices. Measurement and assessment of organisational performance is crucial as this will assist in the management of human capital in the organisation. The aim of the study is to develop an assessment system that will be able to measure organisational performance. The system will integrate human capital variables namely competency, teamwork and leadership, and enhance their alignment to improve the overall performance of an organisation. The objective of the research is to develop a model of performance analysis based on human capital parameters in a way it can be organised and systematised to enable the assessment or prediction of organisational performance. The model was calibrated using iteration processes with the set of Key Performance Indicators (KPIs) to determine the desired values of the input variables. The capability of the model to predict organisational performance was determined by comparing the calculated values against the actual performance. Seven organisations were selected based on their similar core business representing each geographical location throughout Malaysia that is the Northern, Eastern, Middle and Southern regions of the Peninsular Malaysia, and Sabah and Sarawak of East Malaysia. Matrix analysis and triangulation methods were used to determine the validity of the findings. A comparative analysis was carried out for the seven selected organisations. Internal and external questionnaire analysis were done and the results were triangulated with Customer Satisfaction Index (CSI) as checkpoint. Research validation tests were carried at another two organisations and results showed that the model of performance analysis developed in this study was able to predict the performance of the two selected organisations with errors less than 10%. The outcome of the study will enable proper and systematic management of organisational performance.

## ABSTRAK

Prestasi organisasi sangat bergantung kepada empat parameter penting iaitu modal insan, kewangan, kemudahan dan amalan pengurusan yang baik. Pengukuran dan penilaian prestasi organisasi penting bagi membantu didalam pengurusan modal insan organisasi. Tujuan kajian adalah untuk membina sistem penilaian yang boleh mengukur prestasi organisasi. Sistem ini akan mengintegrasikan pembolehubah modal insan iaitu kompetensi, kerja berpasukan dan kepimpinan, bagi meningkatkan penjenajarannya untuk meningkatkan prestasi keseluruhan organisasi. Objektif kajian adalah untuk membangunkan model penganalisan prestasi berdasarkan parameter modal insan yang boleh diolah dan disistemkan supaya berupaya menilai atau meramal prestasi organisasi. Model ini telah ditentukan menggunakan proses lelaran dengan set petunjuk prestasi utama (KPI) bagi menentukan nilai input pembolehubah. Keupayaan model untuk meramal prestasi organisasi ditentukan dengan membandingkan nilai prestasi sebenar. Tujuh organisasi dipilih berdasarkan teras perniagaan yang sama mewakili setiap kawasan geografi seluruh Malaysia iaitu Utara, Timur, Tengah, dan Selatan Semenanjung Malaysia, serta Sabah dan Sarawak di Malaysia Timur. Analisa matriks dan kaedah pensegitigaan digunakan bagi menentukan kesahihan penemuan. Analisa perbandingan dijalankan kepada tujuh organisasi dipilih. Analisa soalselidik dalaman dan luaran dijalankan dan keputusan ditersegitiga dengan Indeks Kepuasan Pelanggan (CSI) sebagai titik semakan. Ujian pengesahsahihan kajian dijalankan di dua organisasi dan keputusan menunjukkan model penganalisan prestasi yang dibina berupaya meramal prestasi organisasi dipilih dengan ralat kurang dari 10%. Hasil kajian akan membolehkan pengurusan prestasi organisasi yang sepatutnya dan sistematik.

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## LISTS OF ABBREVIATIONS

AAA	-	American Accounting Association
ANNOVA	-	Univariate Variable Analysis
BATC	-	Business Advanced Technology Centre
B.Sc	-	Bachelor of Science
BOS	-	Blue Ocean Strategy
BSC	-	Balanced Scorecard
CIMA	-	Chartered Institute of Management Accountants
CSA	-	Chan Shahrman Architect
CSRs	-	Customer Service Representatives
DFA	-	Discriminant Function Analysis
DNA	-	Dr.Nik and Associates
DIFF	-	Difference
ECC	-	Economic Competitive Change
EDB	-	Economic Development Board
ESS	-	Error Sums of Squares
ETE	-	Estimate-Talk-Estimate
EU	-	European Union
F.T. LABUAN	-	Federal Territory of Labuan
GOV	-	Government
HBSP	-	Harvard Business School Press
HC	-	Human Capital
HCD	-	Human Capital Development
HCM	-	Human Capital Management
HCDM	-	Human Capital Development and Management
HCPM	-	Human Capital Performance Model
HPWP	-	High Performance Work Practices

HPWS	-	High Performance Work System
HR	-	Human Resources
HR	-	Human Resources
HRM-A	-	HRM-Activities Management
HRM-O	-	HRM-Outcomes
IC	-	Intellectual Capital
ICM	-	International Capital Management
IHRs	-	Integrated Human Resources Strategy
IMA	-	Institute of Management Accountants
IP	-	Individual Performance
IT	-	Information Technology
JBCH	-	Johor Bahru City Hall
JUSE	-	Japanese Union of Scientist and Engineers
KLCH	-	Kuala Lumpur City Hall
KPI	-	Key Performance Indicators
KDN	-	Kementerian Dalam Negeri
LC	-	Labuan Corporation
LDA	-	Labuan Development Authority
MANOVA	-	Multivariate Variables Analysis
MBA	-	Master in Business Management
MCC	-	Manjong City Council
MIT	-	Massachusete Institute of Technology
MNOs	-	Multi National Organisations
MP	-	Marginal Product
MSc	-	Master of Science
NBOS	-	National Blue Ocean Strategy
NWP	-	New Work Process
OFM	-	Official Financial Management
OP	-	Organisational Performance
OPIM	-	Organisational Performance Improvement Model
PDCA	-	Plan Do Check Act
PEST	-	Politic, Economy. Science, Technology

PESTEL	-	Politic, Economy, Science, Technology, Environment, Laws
PhD	-	Doctor of Philosophy
PJC	-	Putrajaya Corporation
PRV	-	Private
QC	-	Quality Control
ROI	-	Return On Investment
ROS	-	Red Ocean Strategy
RSS	-	Regression Sums of Squares
S.E	-	Standard Error
S.S	-	Sums of Square
SAV	-	Save
SCHM	-	Strategic Human Capital Management
SD	-	Structural Design
SMART	-	Specific, Measurable, Accurate, Realistic, Time-bound
SOP	-	Standard Operation Procedures
SPSS	-	Statistical Package of Social Science (Study)
SWOT	-	Strengths, Weaknesses, Opportunities, Threats
T&D	-	Training and Development
TC	-	Technological Change
TEPQ	-	Target Enthusiasm Performance Quality
TEPQa	-	Target Enthusiasm Performance Quality Analysis
TLA	-	Think-Learn-Act
TM	-	Toyota Motors
TSS	-	Total Sums of Squares
UPS	-	Universal Parcel Services
UTM	-	Universiti Teknologi Malaysia
US	-	United States
USA	-	United States of America
WBS	-	Work Breakdown Structure
WRD	-	Work Re-Design

**LISTS OF TRANSLATIONS/DESCRIPTIONS**

Al-Quran	-	The holy book of Islamic Religion
Alhamdulillah	-	All praises are upon Allah
Allahu akbar	-	Allah (god) is the greatest
‘aql	-	the mind, the brain
Co.	-	Company
Kementerian	-	Ministry of Home Affairs
DalamNegeri		
Ltd.	-	Limited
Teknologi	-	Technology
Universiti	-	University

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## **CHAPTER 1**

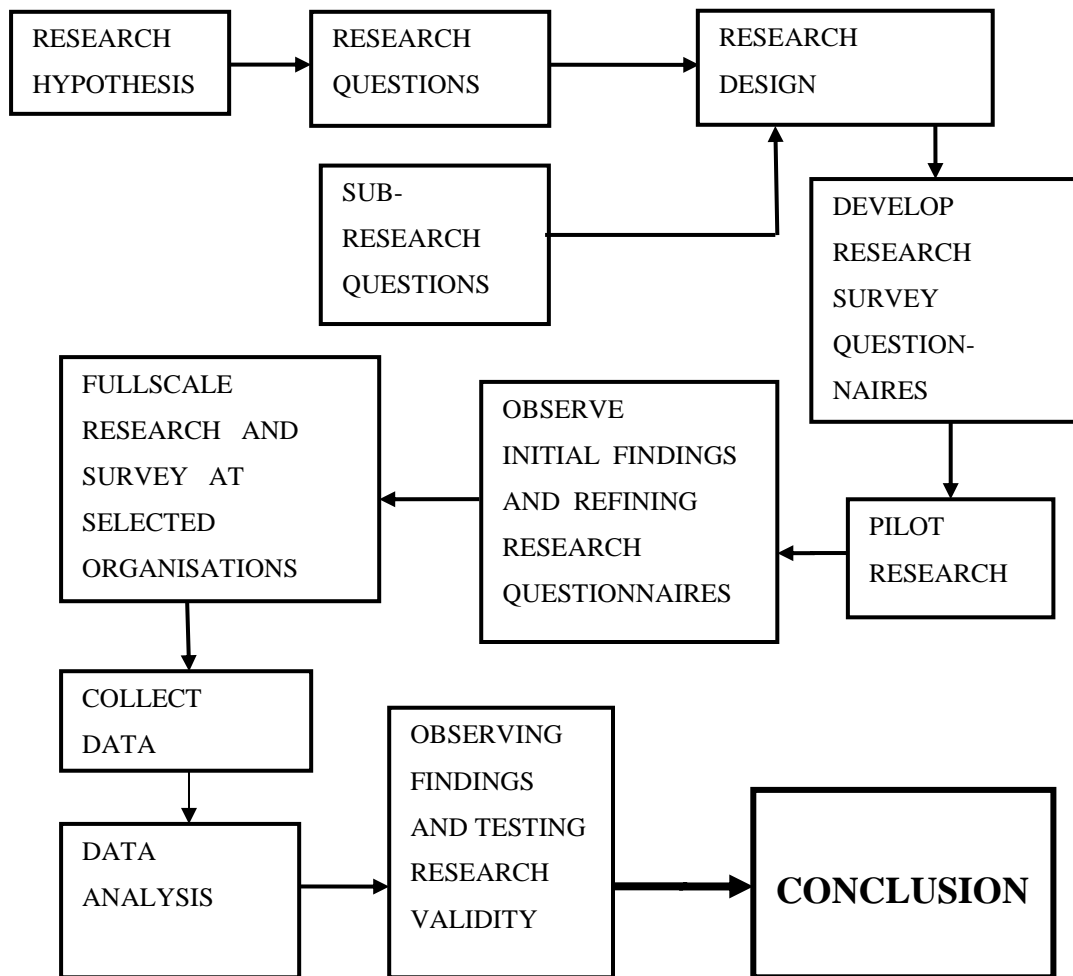
### **INTRODUCTION**

#### **1.1 BACKGROUND OF THE STUDY**

This research is aimed to find and develop a method such that organisational performance is possible to be assessed and predicted using the method devised. The research uses modelling technique where questionnaires are devised and distributed to respondents inside and outside the organisations. The questionnaires are devised to get feedback from the respondents about the performance of the organisation under study. Questionnaires are developed based on human capital performance parameters such as employees competency, team performance, good leadership, good policies, good organisational behaviour and norms, strong financial standing and enough facilities and equipments. This is categorised as qualitative analysis where binomial analysis is carried to get the results about the performance of the organisation involved.

The result about the organisational performance is then compared to the actual performance of the organisation measured based on key performance indicators ( KPI ), management records, industry awards, previous approved performance and independent third party assessment. The difference between modelled performance and actual performance then is used as basis for performance analysis. The research concept is illustrated in (Figure 1.1) as follows.

### 1.1.1 Research concept map



**Figure 1.1** Concept map of the research

Figure 1.1 above shows a concept map of the research processes and methodology. The first step of the research is doing initial analysis (Pilot Research) to an organisation. The organisation chosen was where the author is working in this organisation. The reason why this organisation was selected is to the convenient of the author for easy and faster communication in collecting data and questionnaires survey works. The pilot research done at this organisation later became case study of this research. Research questionnaires are developed based on pilot research observations and hypothesis of this research as illustrated as shown above (Figure 1.1). Organisation performance assessment is necessary for the organisation to improve their performance. In today's stiff competition, it is crucial



that organisation needs to improve and stimulate their performance in order to compete in challenging global competition.

The study involved the finding of the correlation between modelled (analysed) performance and actual (measured) performance. The difference between the modelled (analysed) performance and actual (measured performance) will be noted and this is called “the correction factor” of the correlation. From this correlation then the prediction of the real-time organisational performance can be derived based on modelled analysis.

The study about human capital and its link to performance improvement is significant for organisation performance improvement initiatives. Model development will facilitate better methodology and tools to estimate or predict the performance of the organisation as an important part of organisation improvement initiatives.

Technological development and stiff global competition require the creation of new knowledge which is communicated to employees that leads to continuous innovations. There is a critical need to change from providing a narrow technical skill based to acquiring an ever-expanding competencies and skills.

The view which highlights the supremacy of an organisation that learns faster than its competitors, as sustainable competitive advantage, has led to a burgeoning interest in continuous development and the notion of a “learning organisation” (Heraty and Morley, 1997).

Learning organisation will be adaptive to the change in environment and competitive advantage requirements. It learns from its past mistakes and experiences and improves the technical know-how so it will be able to outclass its competitors (Porter, 1980).

Peddler *et.al.*, (1997) stated that a learning organisation is the term given to a company that facilitates the learning of its members and continuously transforms itself. Learning organisations develop as a result of the pressures facing modern organisations and enables them to remain competitive in the business environment.

Peter Senge (1990) has developed the learning organisation concept which was known as “The Fifth Discipline” which contains five main features that are; 1) systems thinking 2) personal mastery 3) mental models 4) shared vision and 5) team learning. It encourages organisations to shift to a more inter-connected way of thinking. Organisations should become more like communities that employees can feel a commitment to. They work harder for an organisation they are committed to.

Organisations do not organically develop into learning organisations as there are factors prompting their change. As organisations grow, they will lose their capacity to learn as company structures and individual thinking are becoming rigid. Problems are arising and the proposed solutions often turn out to be only short term (single loop learning) and re-emerge in the future. In order to remain competitive, many organisations have restructured, with fewer people in the company. This means those who remain need to work more effectively. To create a competitive advantage, companies need to learn faster than their competitors and to develop a customer responsive culture. Argyris identified that organisations need to maintain knowledge about new products and processes, understand what is happening in the outside environment and produce creative solutions using the knowledge and skills of all within the organisation. It requires cooperation between individuals and groups, free and reliable communication, and a culture of trust (Argyris,1999).

Another effort that organisations can emulate is observing and implement best practices in a particular industry. Best practices have been followed by the industry based on experiences or research findings.

A best practice is a method or technique that has consistently shown results superior to those achieved with other means, and that is used as a benchmark. In addition, a "best" practice can evolve to become better as improvements are discovered. Best practice is considered by some as a business buzzword, used to describe the process of developing and following a standard way of doing things that multiple organisations can use. Best practices are used to maintain quality as an alternative to mandatory legislated standards and can be based on self-assessment or benchmarking (Bogan *et.al.*, 1994).

Some consulting firms specialise in the area of best practice and offer pre-made 'templates' to standardise business process documentation. Sometimes a "best practice" is not applicable or is inappropriate for a particular organisation's needs. A key strategic talent required when applying best practice to organisations is the ability to balance the unique qualities of an organisation with the practices that it has in common with others (Bogan *et.al.*, 1994).

Best practice is a form of program evaluation in public policy. It is the process of reviewing policy alternatives that have been effective in addressing similar issues in the past and could be applied to a current problem. Determining "Best" or "Smart" practices to address a particular policy problem is a commonly used but little understood tool of analysis because the concept is vague and should therefore be examined with caution (Bardach, 2011).

Bardach (2011) provides the following theoretical framework in his book, "*A Practical Guide for Policy Analysis*":

#### 1) Develop Realistic Expectations

Bardach advises the policy analyst that it is important to maintain realistic expectations when seeking a "best practice" in public policy analysis because the practice may not be solving the problem at all and it may instead produce unfavorable results. Because a practice seems to be tailored to a specific policy problem and also based on solid research, it does not necessarily mean it is creating good results. However the research can produce thought-provoking concepts on what can and can not work when put into practice.

#### 2) Analyse Smart Practices

In policy analysis, a "best" or "smart" practice is a clear and concrete behavior that solves a problem or achieves a goal. Smart practices take "advantage" of an idle opportunity at a *low cost and little risk*. Bardach refers to this as finding the free lunches. These are opportunities for creative policy improvements such as "cost-based pricing" or "input substitution" that have the possibility to generate public value at a very low cost. Breaking loose from conventions and challenging assumptions can also be way to take advantage of an idle opportunity. An example

of this is the highly controversial practice of the government contracting out a community good or service to non-profits or the private sector. This challenges the assumption that a community good or service must be financed through taxation and delivered by government employees.

### 3) Observe the Practice

The primary mechanism in a "smart" practice is the ability or the means of achieving a goal in a cost-effective manner. The secondary mechanisms include implementing features, supportive features and optional features. It can be very complicated to separate between the functions in getting the mechanism to work and the features that support those functions. Bardach recommends when adapting smart practices for another source, it is important to identify the core essence of the practice while allowing flexibility for how it is implemented so it remains sensitive to local conditions. Robust smart practices are adaptable to various conditions, have many operational features, and can employ similar but diverse ways to achieve their goals.

### 4) Describe Generic Vulnerabilities

In addition to the reasons why a smart practice might succeed, an analyst should describe potential vulnerabilities that could lead a smart practice to fail. These weaknesses are "generic vulnerabilities". Two types of vulnerabilities are worth particular attention: 1) poor general management capacity, which makes it more difficult to effectively implement a smart practice, and 2) weaknesses inherent to the practice itself. Policy-makers must develop safeguards in order to minimise the risk of generic vulnerabilities.

### 5) But Will It Work Here?

The final step in identifying an appropriate "best practice" for a policy problem is to ensure that the context from which the practice is derived is comparable to the context in which it will be applied. Risks to implementing the selected "best practice" in the applied context as well as what support structures can be put in place need to be anticipated in order to maximise the likelihood of success. If utilising a pilot or demonstration program "best practice" the success of that practice

needs to be discounted in order to account for the better than average favorable conditions pilot and demonstration programs usually operate under. These conditions include increased enthusiasm, advantageous political and economic conditions, and less bureaucratic resistance due to the lack of permanency in pilot programs. Finally, when considering implementing a "best practice" on a wide scale one must be aware of the 'weakest link' sites with minimal to no resources and how those sites will be supported in order to create the desired policy outcomes.

The other tools that an organisation can use to predict performance is Balance Scorecard. *The balanced scorecard (BSC)* is a strategy performance management tool - a semi-standard structured report, supported by design methods and automation tools, that can be used by managers to keep track of the execution of activities by the staff within their control and to monitor the consequences arising from these actions. It is perhaps the best known of several such frameworks (it was the most widely adopted performance management framework reported in the 2010 annual survey of management tools undertaken by Bain & Company ) (Malina, *et.al.*, 2001).

The characteristic of the balanced scorecard and its derivatives is the presentation of a mixture of financial and non-financial measures each compared to a 'target' value within a single concise report. The report is not meant to be a replacement for traditional financial or operational reports but a succinct summary that captures the information most relevant to those reading it. It is the method by which this 'most relevant' information is determined (i.e., the design processes used to select the content) that most differentiates the various versions of the tool in circulation. The balanced scorecard also gives light to the company's vision and mission. These two elements must always be referred when preparing a balance scorecard (Altrichter, *et.al.*, 2008).

As a model of performance, the balanced scorecard is effective in that "it articulates the links between leading inputs (human and physical) processes, and lagging outcomes and focuses on the importance of managing these components to achieve the organisation's strategic priorities" (Altrichter, *et.al.*, 2008).

The first versions of balanced scorecard asserted that relevance should derive from the corporate strategy, and proposed design methods that focused on choosing measures and targets associated with the main activities required to implement the strategy. As the initial audience for this were the readers of the Harvard Business Review, the proposal was translated into a form that made sense to a typical reader of that journal - one relevant to a mid-sized US business. Accordingly, initial designs were encouraged to measure three categories of non-financial measure in addition to financial outputs - those of "customer," "internal business processes" and "learning and growth". Clearly these categories were not so relevant to non-profits or units within complex organisations (which might have high degrees of internal specialisation), and much of the early literature on balanced scorecard focused on suggestions of alternative 'perspectives' that might have more relevance to these groups. Modern balanced scorecard thinking has evolved considerably since the initial ideas proposed in the late 1980s and early 1990s, and the modern performance management tools including Balanced Scorecard are significantly improved - being more flexible (to suit a wider range of organisational types) and more effective (as design methods have evolved to make them easier to design, and use) (Malina *et.al.*, 2001).

Organisations have used systems consisting of a mix of financial and non-financial measures to track progress for quite some time. One example of a such a system was created by Art Schneiderman in 1987 at Analog Devices, a mid-sized semi-conductor company; the Analog Devices Balanced Scorecard was similar to what is now recognised as a "First Generation" Balanced Scorecard design (Kaplan *et.al.*, 2001).

Subsequently, Art Schneiderman participated in an unrelated research study in 1990 led by Dr. Robert S. Kaplan in conjunction with US management consultancy Nolan-Norton, and during this study described his work on performance measurement. Kaplan and David P. Norton included anonymous details of this use of balanced scorecard in a 1992 article (Harvard, 1992).

Kaplan and Norton's article was not the only paper on the topic published in early 1992 but Kaplan and Norton paper was a popular success, and was quickly followed by a second in 1993. In 1996, they published the book *The Balanced*

*Scorecard*. These articles and the first book spread knowledge of the concept of balanced scorecard widely, and has led to Kaplan and Norton being seen as the creators of the concept ((Malina *et.al.*, 2001).

While the "balanced scorecard" terminology was coined by Art Schneiderman, the roots of performance management as an activity run deep in management literature and practice. Management historians such as Alfred Chandler suggest the origins of performance management can be seen in the emergence of the complex organisation – most notably during the 19th century in the USA. More recent influences may include the pioneering work of General Electric on performance measurement reporting in the 1950s and the work of French process engineers (who created the literally, a "dashboard" of performance measures) in the early part of the 20th century. The tool also draws strongly on the ideas of the 'resource based view of the firm proposed by Edith Penrose. However it should be noted that none of these influences is explicitly linked to original descriptions of balanced scorecard by Schneiderman, Maisel, or Kaplan & Norton (Niven, P.R., 2002).

Kaplan and Norton's first book, *The Balanced Scorecard*, remains their most popular. The book reflects the earliest incarnations of balanced scorecards effectively restating the concept as described in the second Harvard Business Review article. Their second book, *The Strategy Focused Organization*, echoed work by others (particularly in Scandinavia) on the value of visually documenting the links between measures by proposing the "Strategic Linkage Model" or strategy map (Malina *et.al.*, 2001).

Design of a balanced scorecard ultimately is about the identification of a small number of financial and non-financial measures and attaching targets to them, so that when they are reviewed it is possible to determine whether current performance 'meets expectations'. The idea behind this is that by alerting managers to areas where performance deviates from expectations, they can be encouraged to focus their attention on these areas, and hopefully as a result trigger improved performance within the part of the organisation they lead. The original thinking implementation of a strategy, and, perhaps unsurprisingly, over time there has been a blurring of the boundaries between conventional strategic planning and control activities and those required to design a Balanced Scorecard. This is illustrated well

by the four steps required to design a balanced scorecard included in Kaplan & Norton's writing on the subject in the late 1990s:

1. Translating the vision into operational goals;
2. Communicating the vision and link it to individual performance
3. Business planning; index setting
4. Feedback and learning, and adjusting the strategy accordingly (Kaplan, 1999).

These steps go far beyond the simple task of identifying a small number of financial and non-financial measures, but illustrate the requirement for whatever design process is used to fit within broader thinking about how the resulting Balanced Scorecard will integrate with the wider business management process. This is also illustrated by books and articles referring to Balanced Scorecards confusing the design process elements and the balanced scorecard itself. In particular, it is common for people to refer to a "strategic linkage model" or "strategy map" as being a balanced scorecard (Kaplan, 1999).

Although it helps focus managers' attention on strategic issues and the management of the implementation of strategy, it is important to remember that the Balanced Scorecard itself has no role in the formation of strategy. In fact, balanced scorecards can comfortably co-exist with strategic planning systems and other tools. Many authors have since suggested alternative headings for these perspectives, and also suggested using either additional or fewer perspectives. These suggestions were notably triggered by a recognition that different but equivalent headings would yield alternative sets of measures.

The major design challenge faced with this type of balanced scorecard is justifying the choice of measures made. "Of all the measures you could have chosen, why did you choose these?". This common question is hard to answer using this type of design process. If users are not confident that the measures within the Balanced Scorecard are well chosen, they will have less confidence in the information



it provides. Although less common, these early-style balanced scorecards are still designed and used today. In short, early-style balanced scorecards are hard to design in a way that builds confidence that they are well designed. Because of this, many are abandoned soon after completion (Epstein, *et. al.*, 2001).

In the mid-1990s, an improved design method emerged. In the new method, measures are selected based on a set of "strategic objectives" plotted on a "strategic linkage model" or "strategy map". With this modified approach, the strategic objectives are distributed across the four measurement perspectives, so as to "connect the dots" to form a visual presentation of strategy and measures. To develop a strategy map, managers select a few strategic objectives within each of the perspectives, and then define the cause-effect chain among these objectives by drawing links between them. A balanced scorecard of strategic performance measures is then derived directly from the strategic objectives. This type of approach provides greater contextual justification for the measures chosen, and is generally easier for managers to work through. This style of balanced scorecard has been commonly used since 1996 or so: it is significantly different in approach to the methods originally proposed, and so can be thought of as representing the "2nd generation" of design approach adopted for balanced scorecard since its introduction (Epstein, *et. al.*, 2001).

Several design issues still remain with this enhanced approach to balanced scorecard design, but it has been much more successful than the design approach it superseded. In the late 1990s, the design approach had evolved yet again. One problem with the "2nd generation" design approach described above was that the plotting of causal links amongst twenty or so medium-term strategic goals was still a relatively abstract activity. In practice it ignored the fact that opportunities to intervene, to influence strategic goals are, and need to be, anchored in the "now;" in current and real management activity.

Secondly, the need to "roll forward" and test the impact of these goals necessitated the creation of an additional design instrument; the Vision or Destination Statement. This device was a statement of what "strategic success," or the "strategic end-state" looked like. It was quickly realised, that if a Destination Statement was created at the beginning of the design process then it was much easier to

select strategic activity and outcome objectives to respond to it. Measures and targets could then be selected to track the achievement of these objectives. Design methods that incorporate a "destination statement" or equivalent (e.g. the results based management method proposed by the UN in 2002) represent a tangibly different design approach to those that went before, and have been proposed as representing a "3rd generation" design method for balanced scorecard (Kaplan, 2004).

Design methods for balanced scorecards continue to evolve and adapt to reflect the deficiencies in the currently used methods, and the particular needs of communities of interest (e.g. NGO's and government departments have found the 3rd generation methods embedded in results based management) are more useful than 1st or 2nd generation design methods (Kaplan, 2004).

In more complex organisations, where there are multiple balanced scorecards to report and/or a need for co-ordination of results between balanced scorecards (for example, if one level of reports relies on information collected and reported at a lower level) the use of individual reporters is problematic. Where these conditions apply, organisations use balanced scorecard reporting software to automate the production and distribution of these reports. Recent surveys have consistently found that roughly one third of organisations used office software to report their balanced scorecard, one third used software developed specifically for their own use, and one third used one of the many commercial packages available (Malin, *et.al.*, 2001).

Model is developed to be able to predict the level of performance of an organisation. This method of analysis is divided into as qualitative analysis and quantitative analysis. Cross-analysis method in the qualitative analysis that will enable the production of a convincing results where comparisons are made between model, actual, general opinions, industry standards, organisations or community practices (best practices), industry award quality standard such as Baldrige Organisational Quality Award, and National Quality Awards methods of organisational performance analyses. This method is known as *triangulation method*.

Triangulation is more rigorous and concise method of analysis in order to get convincing and reliable result. In the social sciences, triangulation is often used to indicate that two (or more) methods are used in a study in order to check the results.

The concept of triangulation is borrowed from navigational and land surveying techniques that determine a single point in space with the convergence of measurements taken from two other distinct points. The idea is that one can be more confident with a result if different methods lead to the same result (Rothbauer *et.al.*, 2008).

Triangulation is a powerful technique that facilitates validation of data through cross verification from two or more sources. In particular, it refers to the application and combination of several research methodologies in the study of the same phenomenon (Bogdan *et.al.*, 2006).

Every investigation knows the original deviation of the concept of triangulation: A point of geometric space may be established by specifying the intersection of the three vectors (not two or one, and four would be redundant). This concept has been borrowed for dealing with social science evidence. The most robust fact may be considered to have been established if the three sources all coincide. Consider the difficulty of establishing the occurrence of an event. You would be more confident in saying that the event had occurred if your study showed that information from interviews, documents, and archival records all pointed to the same direction. Most of the events reported in the present case reflect such condition. This type of triangulation is the most desired pattern for dealing with case study data and you should always seek to attend it. An important clue when doing your fieldwork is to ask the same question of different sources of evidence. If all sources point to the same answer, you will have successfully triangulated your data. (Yin. R. K, 2003).

The limitations on this study are as stated as follows :

- 1) Human capital literature is wide so its theories and methodologies are ever changing and there are vast amount of variables therefore it is

very difficult to formalise and modelled for it to be systematised so that consistent method of measurements are possible.

- 2) It cannot be quantified hence a direct measurement is not possible. This is a qualitative analysis so that is why it will need model as an effective tool for performance estimations and predictions.
- 3) There is little established consistent methods or formula linking human capital and performance parameters and their correlations hence further research and development is needed in order to enable computerised analysis.

Strategic human capital development needs models linking technological development and stiff global competition, and linking competitive and human capital strategy that align the fit between competitive strategy and human capital practices. This approach distinguishes internal and external fit. The notion of external fit deals with how an organisation mobilises its resources to compete in the external environment (Horwitz *et.al.*, 1996).

Internal fit usually concerns implementing espoused strategic goals and policies, and the degree of alignment between stated intent (vision and mission), actual behaviour and policy performance at operational level. Strategic fit models have developed typologies of human capital practices for different competitive strategies such as innovations, quality practices, quality enhancement and reduction (Horwitz *et. al.*, 1996).

This research is envisaged to model human capital such that a reliable method can be develop to estimate or predict the performance of an organisation. Balanced scorecard is another tool that has been used as a predictor of organisational performance. A case study analysis is used to compare the results so that a sensible conclusion could be derived. The case study organisation is Labuan Corporation where a pilot research was conducted so that a comparative analysis could be carried.

The research will concentrate on human capital performance parameters so that a model can be developed to predict organisational performance. The model developed is expected to facilitate as a tool to analyse an organisational performance and as a guide towards improving organisational performance.

In quantitative analysis, the actual performance of the organisation is derived from direct measurement of KPI (Key Performance Indicators), industry awards, independent third party assessments, certifications and recognitions.

The outcome of the study will facilitate a resilient and credible methods of improving human capital hence organisational performance analysis. The research will concentrate on human capital performance parameters to enhance and enabling the development of a model for organisational performance analysis and prediction.

The findings from this research are expected to facilitate for a systematic management related to Human Capital Development and Management (HCDM). Further, this research will also be able to facilitate as the basis for the development of software facilities.

## **1.2 PROBLEM STATEMENT**

Human capital is major factor that played an important role influencing the performance of an organisation and yet there are not many consistent systems and methods to measure and analyse organisational performance parameters with their linkages to human capital. So far, there is little method that has been established to analyse and measure organisational performance. Literature shows that there are such program ever developed to analyse organisational performance such as “competency profiling” but their usage are segmental rather than holistic approach such that a single system is useful for overall organisational performance analysis and assessment.

A thorough reading to the program shows that it is a program that is suitable for job description and specification for job interview only rather than a method of organisation performance measurement. There is no show about the method on how to measure organisational performance hence its usage is limited.

Therefore it is obvious that a single program that can analyse and measure organisational performance is required hence this research is finding a methodology that such system can be developed. That is why this research is proposing that such a model is developed that will enable the prediction and estimation of real-time organisational performance.

There is a gap between the theoretical concepts and the actual organisational human resource practices which need a model linking the gap as argued by Horwitz (1999). A holistic approach is required to model, analyse and organise the organisational performance improvement parameters and the linkage between human capital and organisational performance.

This research is aimed to develop a model that link human capital and organisational performance as a tool to analyse organisational performance. The method used is to model the organisational performance through questionnaires and sampling hence data analysis to compare modelled and actual performance to see any correlation.

The model is developed based on recommendations by Horwitz (1999) and Kaplan (2007). The model is modified by the author to suit the research needs i.e linking the Human Capital (HC), Organisational Performance (OP), and Human Resource (HR) inputs to Technological & Economic Inputs ( see page 140).

### **1.3 OBJECTIVE**

The objectives of the research are:

- 1) to study and analyse hence devise a model for organisational performance analysis and measurement.
- 2) to assess predicted or estimated organisational performance by modelling.

- 3) to measure human capital performance parameters through questionnaire survey and find their correlations.
- 4) to investigate the correlations between human capital performance parameters and organisational performance.
- 5) to validate the findings in the qualitative and quantitative analysis by adopting the case study and triangulation method of analysis.

The research is based on the questionnaires survey distributed to various individuals of different backgrounds. The research populations are ranging from 1000 to 10,000 populations and sample size is minimum 3% of the populations size as stated in the statistical analysis requirements where there are vast amount of populations, a minimum samples of 3% of the populations are sufficient to represent them.

The research questionnaires are devised such that it can be able to estimate organisational performance. From the responses to the questionnaires, a statistical analysis is carried and by using modelling methods an estimated performance of the organisations are derived. A comparison is made to the actual performance of the organisation which are derived from management records, achievement and awards given to the organisations.

From the results, a model is developed such that a correlation between model performance and actual performance is established.

#### **1.4 SCOPE OF STUDY**

The scope of study involved the measurements of identified performance parameters using Scale 1 to 10 in various organisations selected. The organisations were selected based on their relevance to the research questionnaires. The

organisations selected are from governments organisations and from private companies organisations. The identified performance parameters are derived from Horwitz (1999) and Kaplan (2007) as follows:

- 1) Employee Competency (EC)
- 2) Team Performance (TP)
- 3) Good Leadership (GL)
- 4) Good Policies (GP)
- 5) Good Organisational Behaviour & Norms (GOVN)
- 6) Strong Financial Standing (SFS)
- 7) Enough Facilities And Equipments (EFE)

The research is based on the questionnaires survey distributed to various individuals of different backgrounds in age, education, experience and expertise including member of the public which are related to the organisations under study.

Seven organisations were selected for the distribution of questionnaires survey. One of the organisation is Labuan Corporation being the case study. A pilot test was carried out at Labuan Corporation as a case study research.

## **1.5 THESIS ORGANISATION**

Chapter 1 is the introduction of the thesis describing the study background, problem statement, objective and scope of study. Thesis organisation is also included in this chapter.

Chapter 2 describes the literature review comprising definition of modelling, the meaning of capital, the definition of human capital, the emergence of human capital theories, the human capital economics, streamlining strategy and streamlining models. This chapter also discuss topics about performance analysis and measurements, performance indicators, quality performance, strategic steps towards performance improvement, six elements for organisational performance initiatives,



organisational leaderships, individual and team performance, organisational behaviour and norms, organisation re-engineering, and organisational change vision.

Chapter 3 contains the description on the development of human capital modelling. This chapter describes the need of human capital development, parameters that contribute to good organisational performance, how human capital modelling facilitates human capital development programme, TEPQ Envelop, Organisation Matrix Analysis, Human Capital Modelling, Balanced Scorecard, Ishikawa Fishbone Diagram, and Economic And Competitive Advantage.

Chapter 4 describes the research methodology comprising comparative analysis of various organisations, questionnaires survey methodology, actual performance analysis, streamlining flowchart as compared to Ishikawa Fishbone Diagram, research plan, and pilot research methodology. This chapter also contains research concept, discussion about this research statistical analysis, and about method of proving hypothesis.

Chapter 5 contains results of the analysis such as overall performance, results of questionnaires, model verification and validation, real-time organisational performance, analysis of the findings and hypothesis, and testing of research validity.

Chapter 6 describes the conclusion of this research and future development. This chapter also discuss the significance of the research and its contribution to knowledge and advancement. Significance of this research are:

- i) to estimate and predict the performance of an organisation where a direct measurement is not possible
- .ii) to estimate and predict the performance of organisation where previous records or history of performance is not available.
- iii) as a tool to predict performance more accurately.
- iv) as a smart tool to measure soft-skills of human performance.
- v) to be a framework for future development of software for human capital and performance prediction and analysis.

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