MANPOWER PLANNING IN HONG KONG

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Index: Manpower Requirement Approach (MRA), Labour Market Analysis (LMA)

Abstract: 1.   VTC has been using the Manpower Requirement Approach (MRA) for projecting disaggregate sectoral employment by skill/occupational group. The whole exercise comprises isolated studies of the 25 economic sectors based on employers' perception of possible trends.

2.   Labour Market Analysis (LMA) differs from MRA in terms of both focus and data requirements. LMA focuses on information from all players in the labour market, uses primary as well as other available secondary data, and analyzes data using also econometric models.

3.   For consistency, the Task Force has conceptualized an LMA framework, outlined as:

Level One	*Aggregate Economic Level.*
Level Two	*Aggregate Labour Market Level.*
Level Three	*Disaggregate Labour Market Level.*

1.   The planning of courses and training provisions must be related to future industry needs. However, the assessment of future manpower demand is not an easy task. Manpower projections inevitably involve the exercise of expert judgement based on available historical data.

2.   The Vocational Training Council (VTC) has a rolling programme of manpower surveys. Since 1982, its respective Training Boards and General Committees (TBs/GCs) have been conducting industry-specific manpower surveys on a two or three-year cycle for some 25 economic sectors. The technical workforce covered by VTC's manpower surveys is about 2,055,000, i.e. about 80% of the total number of employed technical persons in all sectors. The four major sectors not covered are Medical, Social Welfare, Personal Services and Education.

3.   VTC uses a computer program, called Adaptive Filtering Method (AFM), to project manpower for several possible scenarios. The program generates a series of curves and obtains optimum curve fitting by adjusting the value of a parameter A to alter the smoothing constant (1 - A). Basing on the series of curves and taking into consideration other socio-economical factors, TBs/GCs analyze and select the most probable manpower demand projection.

4.   AFM is simple to apply and requires few data points. Its basic assumptions are: a high level of economic activities/employment, a continuation of technological advance, and the absence of war or other cataclysmic events. Advocates of AFM have argued that planners can take the various socio-economic factors into account during their selection of the most probable manpower growth/decline projections. Nevertheless, critics of its use contend that the use of only historical data for projection purpose has its limitations.

5.   Guided by the projected manpower demand, course planners within VTC will submit proposed course plans to the respective Departmental Advisory Boards for IVE courses and to TBs/GCs for ITC courses. The consolidated course plan will finally go to the Council and then the Education and Manpower Bureau (EMB) for their policy decisions.

6.   Throughout the various levels, there are constant inputs from experts in the respective economic sectors to ensure that approved course plan has taken into consideration other data and the overall economic situations plus social, technological and other changes; e.g. data collected by IVE/ITCs on planned places, enrolment figures, progression rates, placement rates etc.

7.   The current manpower survey methodology by VTC is referred to as Manpower Requirement Approach (MRA) (Abegaz, 1994). Its three main steps are:

>   *7.1   to project the demand for manpower,*
>
>   *7.2   to project the supply of manpower, and*
>
>   *7.3   to match demand with supply.*

8.   The economic and management consultants, Segal Quince Wicksteed (SQW), has commented that VTC's approach cannot be used to detect problems due to labour market restructuring and its effect on in-service workers. In the absence of an explicit model with determinants (independent variables) for supplementary analysis, SQW doubts whether manpower planners can actually consider the impact of the various socio-economic factors. SQW is however unconvinced that the extrapolations by any straightforward 'curve fitting' method can do so.

9.   In October 1998, VTC set up a Task Force to explore the possibility of using Labour Market Analysis (LMA) in manpower planning. At about the same time, the EMB had commissioned a consultant firm to undertake a study of the best overseas practices with a view to finding out a manpower forecasting model best suited to Hong Kong. Among others, the firm has recommended in its draft report that VTC should focus on short-term industry-specific manpower projections.

10.   Since inception, the VTC Task Force has reviewed the present manpower survey methodology, including survey design, questionnaire, and the dissemination of survey results. It has also studied in some detail three other 'curve fitting' methods: the ANN (Artificial Neural Network) Model, the multivariate models, and the ARIMA (Autoregressive Integrated Moving Average) applications.

11.   After trial-runs using three sets of historical manpower data collected for three different economic sectors (viz. accountancy, sheet metal and IT), the Task Force concluded that the number of data sets available is too small to warrant any further test. The Task Force has however agreed that AFM is basically a special case of the ARIMA model. It is not as comprehensive as the other available statistical tools that are based on more well-developed statistical theories.

12.   At present, VTC surveys are stand-alone. There are few common central assumptions with respect to VTC's other projects and government studies. For better coordination and consistency, the Task Force has conceptualized an LMA framework as follows:

> ***Level One***   *Aggregate Economic Level. Key economic/financial indicators that reflect the general health and stability of the economy and that may have an effect on the labour market in the long, medium and short terms*
>
> ***Level Two***   *Aggregate Labour Market Level. Structural factors of the labour market, including increase in labour force and economic structural changes, sectoral shift, cyclical unemployment, demographic structure and its effects in the long, medium and short terms.*
>
> ***Level Three***   *Disaggregate Labour Market Level. Industry-specific demand and supply analyses in the medium and short terms.*

13.   The Framework reflects the interdependence of labour and economic performance, the cross-sectoral influence, and the supply- and demand-side determinants. Thus, it will provide the missing links between MRA, and quantitative econometric and manpower models.

14.   Labour market behaves in many ways like other markets. Its supply side is the 'employees' and its demand side, the 'employers'. The 'product to be sold' is employees' service, and 'the price to be paid' is the salary and wage plus the terms and conditions of service. Other major players in the labour market include the government, employers' associations and trade unions.

15.   Like other types of market, labour market is neither 'perfect' nor 'efficient'; but the speedy dissemination of information and mobility of people in terms of geographic and economic sectors can make the market more efficient. Labour market mechanism also obeys 'the law of demand and supply' and 'the law of diminishing returns' in the determination of prices.

16.   LMA approach differs from MRA in terms of both focus and data requirements. It stresses that planning for education and skills development should be based on signals from the labour market. As regards focus, information comes **not only** from an amalgamation of employers' perceptions of possible trends, **but also** from other players in the labour market. As regards data, LMA requires, for its comparative analysis of survey findings, the collection of a wide range of data from published sources and earlier surveys, the broad and sectoral labour trends, and other available secondary data. As regards the types of data, LMA needs determinants such as those associated with labour market flexibility because these determinants affect participation and unemployment rates significantly.

17.   LMA approach also entails a much stronger focus on the synthesis and interpretation of data in current and previous surveys, the actual patterns of demand in relation to survey forecasts, use of trend analysis and econometric models, wider consultation and discussion within industrial and commercial sectors before drawing any conclusions. It must be pointed out also that econometric models require regular maintenance. For example, the forecasting model based on the theory of the non-accelerating inflation rate of unemployment (NAIRU) in the USA is no longer valid in the sense that there is a change relationship; as is distinct from a relationship breakdown in the model.

18.   Since the outcome of LMA includes employment and unemployment trends, sectoral breakdown of employment, future requirements and supply in terms of manpower, vacancy and skill, and the application of mathematical models; the LMA approach will enable VTC to plan more strategically. Planners can explore data, fit models, discover patterns, discover points that do not fit patterns, develop scenarios, assess key sensitivities, define and defend strategic priorities, monitor achievables against objectives, and feedback the learning outcomes into future planning cycles (SQW, 1996).

19.   The complex US model by the Bureau of Labour Statistics (Lee, 1999) and Finnish 'Labour Force Model' by Dr. P. Tianen (1990) are based on LMA. Other developing economies are increasingly adopting LMA. In emerging economies, however, ILO's simple trend analysis model remains popular.

20.   The Task Force will be implementing the LMA process through the acquisition of a **data warehouse**. This piece of equipment will provide a broad canvass of social, economic and labour market data/information for each of the major economic sectors. It is an information delivery system consisting of a blend of hardware, software, business knowledge, and systems integration skills. Typically, the data warehouse environment comprises three areas: primary manpower database; extraction and transformation of data from external data sources; and software tools for data analysis.

21.   Data warehouse serves two useful purposes: analytical and decision support, and consolidation of data across many sources. Once set up, the warehouse will become the platform for all future data processing purposes: e.g. trend analysis, regression analysis, analysis using existing econometric or labour market models, and model building and evaluation. Suitable models for the local labour market can be explored and developed. The labour market information derived can also be rapidly disseminated.

22.   In addition to the LMA framework and data warehouse, other improvement recommended by the Task Force includes: the reduction of all questionnaires to two types: standard and non-standard. The standard questionnaire will collect essential quantitative data such as the number of employees, vacancies, trainees, and salary range in the sector. The non-standard one refers to opinion survey questions and other qualitative questions specific to the economic sectors; e.g. demand for in-house and external training, the priority of training courses required by the respondent etc.

23.   As regards dissemination, information on medium-term labour supply composition by age, skill levels, education and need for training or retraining will be included, with potential users' requirements in mind, e.g. employers, academics, human resources managers and government officials. Pictorial representation and coloured charts in addition to tables will be used as far as possible in all publications. In addition to press release, publication, reports, fax-on-demand, CD ROMs, and Internet, VTC will also disseminate its manpower survey findings using data warehousing technique in order that potential users can do their own analysis of the available data from different sources.

24.   The Task Force realizes that LMA is only a very powerful tool for manpower planning purpose. It is not a panacea for all economic problems. LMA must be used with discretion and with an eye on the general direction of the latest economic developments and government economic, social and manpower policies.

25.   From the manpower trends and in response to the latest social and economic developments, VTC will adopt the following measures:

(a)   *to reform all craft courses to upgrade low skills to a higher skill level;*

(b)   *to introduce more technician courses;*

(c)   *to shift emphasis from manufacturing to services sectors;*

(d)   *to strengthen in-service and up-grading training;*

(e)   *to make training programmes more flexible;*

(f)   *to introduce more specialized training in IT, banking, insurance, accountancy and also Chinese cuisine;*

(g)   *introduce trade testing and certification system for more trades; and,*

(h)   *introduce tailor-made course for those less academically inclined S5 school leavers.*

26.   While VTC will endeavor to provide sufficient labour market information to all course planners; it can only accomplish its part at the vocational education and training level. There is the need for concerted efforts of the various players in the labour market to make things happen. For example, the HKSAR government is determined to be the catalyst for sustaining a highly efficient trading, marketing and financial services infrastructure. It has also in its budget allowed for substantial increase for training and retraining. Furthermore, in a report on the long-term economic development for the next thirty years, the government has laid down four major strategies, seven key industrial sectors and six challenges. In other words, the government has set very clear direction for the future manpower planning for HK.

27.   The business sector must respond by spending more on research and development, invest in high technology, and start up new ventures to inject momentum to the local economic and create more employment opportunities as restructuring continues. As an example, the IT and other new technologies sectors have created 45 millions jobs in USA from 1970 to 1997.

28.   Higher education and management association must enhance the skills of senior and middle management. There is also the need to focus on multi-skill, core training and re-training in order to enhance the mobility of the labour force across different economic sectors; and the need to strengthen job matching between training and vacancies. In addition, Hong Kong should perhaps seriously consider the introduction of a vocational qualification framework to give due recognition to vocational education and training and to boost labour flexibility has already been practised by several economic superpowers.

29.   To conclude, manpower projections provide some useful clues to both economic and manpower planners as to what, when and how action must be taken in order to slow down, stop or oven reverse downward trends in manpower demand. If manpower projections can help planners to made the right decisions to sustain reasonable economic growth and high employment rate, then all the objectives of manpower planning are considered to have been achieved.

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