The surface air temperature is a significant meteorological element in agricultural studies and the demand for this data has increased. Thus, satisfactory exactness is required, especially over un-sampled areas. Spatial models of surface air temperature elements were developed for the Peninsular Malaysia region. There were eight environmental variables – elevation, locations (latitude and longitude), and five nearest distances of coastline and four land use types (water bodies, forest, agriculture and built-up) – that are significant to surface air temperature elements, evaluated in this study. A multiple regression model was generated to explain the contributions of these environmental factors for each surface air temperature element. The seasonal and regional roles were also considered in the modelling process. Peninsular Malaysia experiences four seasons; namely, northeast monsoon, spring transition, southwest monsoon and autumn transition. The new regionalization of Peninsular Malaysia was delineated using a multi-step approach by integrating in-situ data for the surface air temperature elements and raster data of Geographical Information System (GIS). The developed climate region divided the area into three regions – West Coast, East Coast and the Main Range. In selecting the most appropriate model, which considered environmental, seasonal and regional factors, four categories of

Contrary to the belief that the Design and Build (DB) procurement approach will result in better project outcomes, many DB projects, particularly public buildings are short of meeting the expectations. One of the major issues faced is the construction defects. Clients usually are at loss while trying to configure how this matter should be dealt with. Consequently, they normally end up rectifying most of the defects at their own cost. In appreciating the need to resolve this continuing problem, the government has introduced a Defects Liability Management (DLM) System by appointing a Service Provider (SP) to record and manage the defects identified during the Defects Liability Period (DLP). Realising the opportunity that can be learnt from this system in providing insights to improve the implementation of future projects, this research was mooted. The aim of this study is to develop an operational framework for improving the current DLM system practiced in DB public hospitals in Malaysia. Seven public hospitals are chosen as the case study. A mixed method approach was adopted for the research. The qualitative enquiry data was drawn from two main project documents namely Procedure Guideline Manuals (PGM) and Condition Appraisal Reports (CAR). The rationale for analysing PGM is to investigate the process of
models were developed for each of the three surface air temperature elements. These categories were ‘all clusters and all seasons’, w_c_s (three models), ‘all clusters and each season’, s (12 models), ‘each cluster and all seasons’, c (nine models) and ‘each cluster and each season’, c_s (36 models). In modelling of surface air temperature elements, analysis of spatial interpolation plays a vital role to produce continuous surface of discrete data, in which all un-sampled values of surface air temperature elements are able to be estimated. In implementing integration of multiple regression models and spatial interpolation technique, the monthly data of T-T’ was generated, in which T was surface air temperature values and T’ was estimated values of the 60 developed models. Interpolation analyses for 70% of T-T’ monthly data were carried out by applying the Inverse Distance Weighting (IDW) technique, since this technique has been widely used, tested and evaluated. IDW direct interpolation of monthly data for surface air temperature elements was also carried out to examine the effect of environmental factors. Cross validation analysis was conducted by using 30% of the monthly data to determine the performance of the models. Although the model category for ‘each cluster and each season’ (c_s model category) produced the lowest errors, the model category for ‘each cluster and all seasons’ (c model category) was recommended as the most appropriate model for each of the three surface air temperature elements. The statistical test to determine the differences between two groups, found that there is no significant difference between the performances of both model categories. Furthermore, the selected model category is simple, practical and user friendly. This research discovered that in addition to the environmental factor, the regional factor plays a significant role in estimating the surface air temperature elements of maximum, minimum and mean in Peninsular Malaysia.

DLM System implemented and its comprehensiveness. Meanwhile, data for defects identified during the DLP were obtained by analysing CAR. The data were sorted, sieved, grouped and transferred into the SPSS software to identify the extent of the DLM System in providing insights to the problems along the project stage and hospital nature. Three statistical analyses were adopted namely (i) frequency analysis to analyse the defects pattern (ii) Two-way ANOVA to analyse the impact of work discipline and hospital towards number of defects and (iii) Chi-Square Test of Association to test on the association of the defects occurrence with the project stage and hospital nature. The second stage of the research enquiry involved a two stage semi-structured interview with the hospital project teams and industry experts. The first stage interview was conducted to determine the comprehensiveness of the current process and to solicit recommendations for improvement. Finally, the improved operational framework was feasibly validated in the second stage interview. The qualitative data were converted and transcribed into Microsoft Word format and analysed manually. The findings suggest that with a comprehensive methodology in place, defects can be effectively traced and categorised to track their root cause and stages of occurrence. It is also established that there is a significant association between the defects occurrence with the project stages and the nature of the hospitals. Therefore, clients can have better recourse to address the issue of defects and provide lessons learnt to manage future projects. Notwithstanding this, the research also highlights the importance of appointing SP to manage defects during the DLP, particularly in complex projects. The research outputs seek to facilitate a comprehensive dimension of defects liability management process and provide significant impacts to the industry.