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# Health and Care Professions Council

Internal Audit – Review of 5 Year Plan Model functionality and controls – March 2017 Update

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# 1    Introduction

1.1    The Health and Care Professions Council (HCPC) is a regulator whose primary objective is "to safeguard the health and well-being of persons using or needing the services of registrants". To achieve this, HCPC maintain a register of health and care professionals who meet their standards for training, professional skills, behaviour and health. As of 31 March 2016, the HCPC regulated c.340,000 individuals, known as registrants, from the 16 professions they regulate, including speech therapists, paramedics and physiotherapists.

1.2    The diversity of the registrant groups serviced by HCPC has implications and leads to inherent challenges, such as how to effectively build financial projections of revenue and costs that appropriately accounts for the diversity of fee levels from different registrant groups, direct and variable associated costs etc. To address this point around financial planning and budgetary processes, HCPC has developed and uses the 5 Year Plan Model[1] to forecast income, costs and associated cash flows.

1.3    The 5 Year Plan Model was developed using an external firm in line with the FAST financial modelling standard[2]. As a result of applying the standard the model includes a large number of calculations to support forecasting of revenues across 16 professions. We reported to the Audit Committee on the 5 Year Plan Model functionality and controls in our report dated 17 November 2015. Since that report HCPC has updated and further developed the 5 Year Plan Model. The amendments to the model have been undertaken by HCPC staff, with the exception of some modifications to the Registrant Module calculations where a Grant Thornton UK LLP specialist modeller was seconded to HCPC under direction of Roy Dunn (responsible for Registrant Model).

1.4    The 5 Year Plan Model is part of a wider modelling suite which includes within the spreadsheet:
   - Registrant model[3]
   - Fitness to Practice (FTP) Caseload Model[4]

1.5    As part of the Grant Thornton 2015/16 Internal Audit Plan, we agreed with the Audit Committee and management that we would undertake a review of the overall coherence of key planning model and potential risks in their use. The modelling suite is or will be used by several individuals within HCPC:
   - 5 Year Plan Model  - Andy Gillies / Tian Tian
   - Registrant Model – Roy Dunn / Kayleigh Birtwistle
   - FTP Caseload Model – John Barwick / Kelly Holder / Eve Seall

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[1] The filename of the file supplied to us is "HCPC 5 Year Plan 2017-2022 17-2-17.xlsb", plus the model user guide "Five year plan user manual 6-2-17.docx"

2 The FAST financial modelling standard is a set of rules on the structure and detailed design of spreadsheet-based models.

[3] The worksheets making up the Registrant model are RegTime, RegInp, RegWrk_UKReg, RegWrk_IntApp, RegWrk_IntReg, RegWrk_GP, RegWrk_Trfs, RegWrk_Rem, RegWrk_Readm, Reg_Summary

[4] The worksheets making up the FTP model are FTPInp, FTPQuant, , FTPQuantSW, FTPQuant_HandC_suppl, FTPCost, FTPCostSW

1.6     This report follows on from the 'Internal Audit 2015-16: Review of 5 Year Plan Model functionality and controls - update' report issued to HCPC on 3 June 2016 (the Previous Report). The Previous Report was an update to the Original Report 'Internal Audit 2015-16: Review of 5 Year Plan Model functionality and controls' (issued on the 18 November 2015), which focused on the outstanding points raised in the Original Report and provided further commentary on updates which had been applied to the 5 Year Plan Model after the 18 November 2015. This report is a further addendum to the Previous Report and once again focuses on the outstanding points raised in the Previous Report and provides further commentary for any additional updates to the 5 Year Plan Model which occurred after 3 June 2016.

## 2 Scope of engagement

HCPC has updated the logic and data flow in several key areas of the 5 Year Plan Model following our last report. Specifically our work has considered the following:

| Area of review | Objective |
| --- | --- |
| **Outstanding points from the last model review in June 2016** | We will review the outstanding points raised on the last report with reference to the updated model to assess whether these points have been addressed |
| **Review the updates to the model as detailed to us** | We will review the amendments to the model as detailed in the email and the review the calculations on a sample basis to ensure that amendments are logical and the calculation logic has been applied appropriately. |
| | Review the amended model calculations to consider the extent to which they reflect financial modelling best practice, and in particular the FAST standard (noting where derogations are being applied). |
| **Application of FAST standard and best practice** | Update our comments as to whether we consider that overall the model is consistent with the FAST standard and modelling best practice |

# 3    Executive Summary and Key Findings

**Overall Conclusion**

The model has improved its compliance with modelling best practice but there remains areas of development (such as the user guide) and some specific calculation issues which management highlighted to us for discussion and which we have commented upon.  The Model remains a business critical spreadsheet for HCPC so we recommend that processes are formalised for how future updates are managed and documented so there is a clear audit trail of updates and evidence of review of changes.  Such reviews should follow the "four-eyes" principle where model input or coding changes are reviewed by a different person.  For example using a version control system and having a log of changes made to the model between versions together with key metrics such as forecast income for 5 years so that any subsequent queries can be traced back and investigated as necessary.

3.1    **Outstanding points from previous report (See section 4 for detailed comments)**

From our review of the latest version of the model we note that there are still a limited number of minor points outstanding.  However these points relate to modelling best practice and do not impact the overall model calculations or results.   Where specific derogations have been made from the FAST modelling standard to reduce the number of rows and calculations (and hence the model size) the rationale has been documented in the user manual.  We consider that such derogations are reasonable in that they do not materially adversely impact the ability of the user to follow the calculations and understand the model logic.

3.2    **Comments for 5 Year Plan Model updates since the Previous Report (See section 5 for detailed comments)**

From the review of the updates to the model, we note that there are still some planned improvements with reference to the FTP calculations in relation to formula simplification and modelling best practice.

We note that some of the updated formula within the registration worksheets do not capture the reforecasting within period and we have identified updates to these formulae to address the issue. We also note that the formulae updates for registrant numbers  limits the mid-year reforecasting logic and recommend that a review of the flags be performed again once the amendments have been implemented.

3.3     **Modelling best practice**

We have noted a number of areas that the model could be improved in relation to adherence to the FAST standard.  Whilst we do not consider these impact on overall model calculations or results, we recommend they are reviewed – the consistent application of a financial modelling standard is recognised by the ICAEW as a key principle for good spreadsheet practice[5].

[5] ICAEW Twenty principles for good spreadsheet practice (second edition)  - "2. Adopt a standard for your organisation and stick to it" -
http://www.icaew.com/~/media/corporate/files/technical/information%20technology/excel%20community/166%20twenty%20principles%20for%20good%20spreadsheet%20practice.ashx

## 4    Points Outstanding from Previous Report

| Previous Grant Thornton Comment | Previous Management Response | Updated Comment |
| --- | --- | --- |
| **1    Income calculations within 5 Year Plan Model** | | |
| The simplified approach which was adopted for Arts Therapists was due to be replicated across the other professions. | Agreed | Resolved.  This has now been replicated across other professions and we have noted no issues during our review. |
| The updated modelling methodology, which was previously applied to the Arts Therapists, addressed our previous comment in relation the application of the FAST standard, with the exception of a derogation in relation to formula simplification which we noted should be documented within the user manual. | Agreed | Resolved.  This has now been replicated across other professions and we have noted no issues during our review. The rationale for derogating from FAST standards 3.03 has been documented in the user manual. |
| The model's calculation layout and use of calculation blocks does not appear to be consistent with the FAST standard in terms of bringing together all the ingredients into a calculation block. Where there has been a derogation from the FAST standard this should be documented in the user manual. | Please refer to the derogation comments within the user manual | Resolved. The derogation from FAST 2.02 in relation to calculation blocks has been detailed in the user manual. |
| **2    Registrant calculations within 5 Year Plan Model** | | |
| No outstanding points noted from the previous model review. | | |

| Previous Grant Thornton Comment | Previous Management Response | Updated Comment |
| --- | --- | --- |
| **3     Fitness to Practice Costs within 5 Year Plan Model** | | |
| We note that the FTPQuant_moving_fcast worksheet does not currently contain calculations and is therefore still work in progress. This worksheet has therefore been excluded from our review. | | Resolved. This sheet has been removed from the updated model. |
| All costs reported in the model are summarised at the top of the FTPCost worksheet. We have tested on a sample basis the inputs contained within the FTPInp worksheet and identified that changing the number of case managers does not have an impact on the costs presented within the FTPCost worksheet and that a number of inputs were not used. We did not identify any other unexpected changes. | | Resolved. Within the updated model we have re-performed the test and note that changing the number of case managers in the updated model does have an impact on the costs presented within the FTPCost worksheet. |
| It should be noted that a large number of the unused inputs relate to 'Actual' values. We recommend that these should either be removed from the model or linked to the relevant calculations. | | We note that there are a number of redundant rows on the "FTPInp" sheet including G196:EO196 and G200:EO200. We would recommend removing redundant rows. |
| As with the previous model, the identified cost groups still follow a similar profile to each other. However, these costs now increase until the period ending 30 April 2016 (period 61), where they increase sharply before decreasing until the period ending 31 August 2017 (period 77) where they flatten. This trend appears to be driven by the 'Case to answer rate applicable per | | Resolved on the basis that this relates to input assumptions which are reviewed by management. |

| Previous Grant Thornton Comment | Previous Management Response | Updated Comment |
|---|---|---|
| given month', which changes over this period as a result of changes in input values over time. | | |
| Additionally, we note that functionality has been added on the inputs for a number of cost groups to change the rates for these several times. For example, the model contains functionality to change the rate at which cases are processed a limited number of times using an index match formula with the date of the change required. Flexibility may be increased if a series was used to control levels of activity over a period, however we note that this method would be harder to review. | | We note that the same index match formula and technique has been maintained in the updated model. |
| The model contains functionality to change the number of case workers a limited number of times using an index match formula with the date of the change required. However, these do not feed into the output. Please consider removing this section if it is no longer used in the model. | | Resolved. In the updated model the case manager numbers follows the same index match formula noted previously. We noted through testing that this input does link to the output and impacts costs. |
| Functionality to change between actuals and forecast data has been included within the FTPQuant worksheet. In the extract provided this is a hardcoded value which we assume will be dynamic when reincorporated into the 5 Year Plan Model but recommend this is confirmed in the final model. | | Resolved. These have now been linked |

| Previous Grant Thornton Comment | Previous Management Response | Updated Comment |
|---|---|---|
| We note that there currently is no check to test whether the balance of cases falls below zero or hits a threshold, it would also be prudent to have a check/threshold for the number of cases per case manager Such functionality may aid management in resource planning. | | **Outstanding:** No check has been included in the updated model, we would recommend that one is added. |
| We note that the worksheet titled FTPQuant_moving_fcast currently contains inputs that have not been formatted as inputs. | | Resolved. This sheet has been removed from the updated model. |
| We note that the timeline across the worksheets in the model are hard-coded. To comply with FAST standard this should be consistent and recommend linking to a common timeline in model across row | | The timelines within the FTP sheets have been linked to the common timeline within the model.<br><br>**Outstanding:** We note however that on FTPQuant_HandC_Suppl in cells G2:I5 the row headings are hard coded, we would recommend consistency across the row linking to the common timeline. |
| We note that a number of cells contain an error. We suggest deleting these cells as they do not appear to have any dependents. | | **Outstanding:** On the FTPQuant worksheet a number of cells (M95, M114 and M142) contain #REF!, would recommend deleting these cells as they do not appear to have any dependents. |
| Where values are a link to another part of workbook we suggest also linking label as this would reduce the risk of mislabelling when amending the model. | | **Outstanding:** On the FTPQuant worksheet for a number of cells (G13:G48) the row labels do not |

| Previous Grant Thornton Comment | Previous Management Response | Updated Comment |
|---|---|---|
| | | link to another part of the workbook as is the case with the other values in the row. |
| **4  Overall review of 5 Year Plan and framework for updating / modifying versions and the individual components.** | | |
| The updated methodology has addressed the redundant calculations, however we note that there are further redundant calculations and inputs within the updated Fitness to Practice model. | | **Outstanding:** On the FTPInp sheet we note that there are a number of redundant rows (G196:EO196, G200:EO200) with no dependents.  The deletion of these rows should be considered. |
| We note there are no detailed user guides or maps for a complex model which presents risks on succession planning.  We recommend that guides are developed as to how the various inputs are updated each year to ensure assumptions are reviewed and updated in a consistent manner.  This is particularly important where models include a number of input sheets or where the inputs need to be updated in a specific way.  For example it is important that any adjustment to renewal fees entered on the "Fee changes" worksheet coincide with the renewal dates entered on " 'RegInp_M'!I280:I297" | Agreed | A user manual has been developed which provides detailed sheet by sheet explanation to help users of the model.

**Outstanding:** We note that significant progress has been made but there are still areas to complete (highlighted yellow) |

| Previous Grant Thornton Comment | Previous Management Response | Updated Comment |
|---|---|---|
| It is understood that there is no formalised change control or tracker currently in place. We would recommend that this is implemented to monitor version control and future updates | | **Outstanding** |
| We note that the model still reports errors on the checks sheet which we suggest are closed. | | **Outstanding:** The updated model still reports a number of errors on the check sheet which we understand are the result of inputs requiring an update. Once the latest updates are entered it should be confirmed that no errors are present. |

## 5    Comments for 5 Year Plan Model updates since the Previous Report

| Detail of updates per Management's email | Grant Thornton comment | Management's response |
|---|---|---|
| **1    Income calculations within 5 Year Plan Model** | | |
| No changes to the income calculations were noted per email from management. | We have noted no changes to structure and calculation logic for income during our review. | N/A |
| **2    Registrant calculations within 5 Year Plan Model** | | |
| HCPC noticed that the mid-year reforecast adjustment, which applies a factor to the remaining months of the current year's budget figures, applies to the following years as well,. E.g., when the model is within the 2016-17 budget year, reforecasting based on actuals for months 1-9, Biomedical scientists UK entrants for the 1st 9 months of 2016-17 are ahead of forecast but within tolerance, so the reforecast adjustment scales down the values for months 10-12 by a factor of 0.76, giving a forecast total BS UK entrants for 2016-17 of 765.  But then that factor of 0.76 is applied to the forecast BS UK entrants for all the future years, so you have BS UK entrants apparently dropping from 765 a year to 580 a year in 2017-18 onwards. That wasn't the intention. This version of the model has been rolled forward to the next budget year, and there is no in-year data for 2017-18, so the mid-year reforecast method does not apply.  But there may be occasions when HCPC want to reforecast for the budget year and forecast for the future years, without the reforecast | Having reviewed the formulae it appears as though the SUMPRODUCT in cells I354:I371 is looking at the variance # rather than the re-forecasting flag, as would be expected; it is also not spanning the whole length of the row (although this does not affect the outcome). We note that amending the formula for these should result in the reforecasting switch working correctly and thus only reforecasting the annual totals when the tolerance has been exceeded. An example would be: for cell 'RegWrk_UKReg'!I354, the formula currently reads =SUMPRODUCT($N$287:$EO$287, N248:EO248) – this could be updated to =SUMPRODUCT($N$287:$FY$287, N268:FY268).<br><br>The formulae in cells 'RegWrk_UKReg'!N354:FY371 currently do not capture the reforecasting within period. The formula '=IF($I290+$I310=2,N141*N$330,N141*($I290+$I310)*N$330*N$332)' currently applies both the adjusted and maintained total modifiers to the | |

| Detail of updates per Management's email | Grant Thornton comment | Management's response |
|---|---|---|
| methodology affecting the future years' calculations. We were asked to look at the reforecast formulas to consider an amendment which isolates the reforecast changes to the budget year. | values for every year going forward; apart from when the actuals end within the budget, in which case all forecasts are reduced to zero. With the updated 'reforecast flag' as detailed above the formula which was historically in the cell '=IF( $I354, N$330 * $I310 * N141, (N$331 * $I290 * N141) + (N$332 * N141))' should then work as expected. | |
| When HCPC rolled forward to the new budget year, registrant numbers were being doubled by the formulas in rows 354:371 of RegWrk_UKReg, RegWrk_IntApp and RegWrk_IntReg. The formulas in those rows were multiplying the forecast value by both the reforecast factor when the forecast is maintained (cells I290:I307) and the reforecast factor when the forecast is adjusted (I310:I327). For the purpose of reforecasting in year, those 2 factors are mutually exclusive – one of them will always be zero – so there is no double counting in a mid-year reforecast. But for the purpose of a new budget year the factors reset to 1 so the forecast should not be multiplied by both of them. The formulas were amended in rows 354:371 as an if statement so as to avoid the double counting. | The replacement formula appears to have impacted on the mid-year reforecasting methodology, when the original formula was re-entered into the cells the mid-year reforecasting was applied as expected. The IF statement in the original formula '=IF( $I354, N$330 * $I310 * N141, (N$331 * $I290 * N141) + (N$332 * N141))' means that it was not possible to multiply the original forecast (row 141) by both the adjusted (I320) and maintained (I290) modifiers. This duplication could have been the result of an error with the flags in rows 331 and 332, which may have been the result of inconsistent model inputs - although we have been unable to replicate the error within the file provided. | |

**3      Fitness to Practice Costs within 5 Year Plan Model**

| | | |
|---|---|---|
| HCPC made some changes to the FTP section, e.g. separating the calculations for social workers from those for other professions, to facilitate modelling for when social workers move to the new regulator being set up by the Department for Education. Internal | We note that the FTP section is subject to further formulae changes. However, we have provided some high level comments below. | |

| Detail of updates per Management's email | Grant Thornton comment | Management's response |
|---|---|---|
| meetings were planned in coming weeks to finalise the structure and assumptions in the FTP section, so we understand this may result in some further changes. | We note the separation of the calculations for the Social Workers, however each FTPQuant sheet still has lines which are indicated as in progress and therefore we have not reviewed these in detail.<br><br>We note that FAST formatting has not been applied to this sheet such that:<br><br>• columns are not resized,<br>• formats are not standard (e.g. zero values are '0' not '-'),<br>• calculation components are not separated,<br>• "counterflows" at the top the FTPQuant sheets are not indicated as such (by shading grey) and have different line item labels;<br>• links to inputs have not been row anchored,<br>• Not all items have units labelled<br>• "Daisy chaining" is also present in numerous locations (e.g. 'FTPQuant'!N303 – links to a cell but is also a inter-sheet link itself)<br>• links to other worksheets are not marked red to indicate this (e.g. 'FTPQuant_HandC_Suppl'!N73:EO74)<br><br>We note that calculations blocks such as 'FTPQuant'!76:88 are not in accordance with the FAST standards for calculations blocks – this however has been derogated against on page 15 of the user manual. | |

| Detail of updates per Management's email | Grant Thornton comment | Management's response |
|---|---|---|
| | The formulae in cell 'FTPQuant'!N117 and repeated in other cells could be simplified from =IF(SUM(N110,N111,N112,-N116)<0,0,SUM(N110,N111,N112,-N116)) to = MAX(SUM(N110,N111,N112,-N116), 0) | |
| **4 Overall review of 5 Year Plan and framework for updating / modifying versions and the individual components.** | | |
| HCPC are currently using forecast results for 2016-17 in place of the actuals for 2016-17. The budget for 2017-18 is still being finalised and budgeted balance sheet values have not yet been entered. So the balance sheet does not balance, hence the warnings on the Check sheet | We note the errors currently indicated in the model are linked to the balance sheet not balancing as a result input data not being up-to-date. We do however note that there appears to be some failing checks which are not linked to the check page ('Financial Overview'!F93) and recommend these are linked through. | |

## 6   Best practice comments

| Grant Thornton Comment | Management Response | Updated Comment |
| --- | --- | --- |

**1   Income calculations within 5 Year Plan Model**

From review of the IncWrkAS sheet we noted the following points in relation to the application of modelling best practice;

- Row labelling – Where values are a link to another part of workbook we suggest also linking label.  In cells G18 and G47 we note that the row label does not link to the correct row below or they are not linked at all.

- Font colour – FAST 1.01-06 recommends that exports should be marked with red font and imports with blue font.  In a number of cells including but not exclusively I36, G40:I40, G229:EO232 and G235:EO238 these cells are highlighted in blue despite not being inputs.  Cells G21:EO32 are outputs however they are not formatted as such with red font.

- Hiding columns – FAST 2.01-08 states that rows and columns should not be hidden except for those beyond the defined time axis.  We note that columns A, C, D and E are hidden and recommend that no columns be hidden.

| Grant Thornton Comment | Management Response | Updated Comment |
|---|---|---|
| On the "IncInp" and "Fee changes" sheets we note that there is a mix of hard coded dates and links to the timeline. We recommend that these should link to a common timeline as in the other income sheets. | | |
| FAST 3.06-02 states that a model should not link to a link (otherwise known as "daisy chaining". All links should form a link to the original source not an intermediate link creating a series. Within IncWrkAS G220:H221 these rows link to another row within the worksheet which in turn links to the IncInp sheet. We recommend that the links should be updated to reference the IncInp sheet directly. | | |
| On the FTPQuant and FCPQuantSW worksheets we note a number of counter flows which should be shaded grey to indicate such a flow (for example G13:EO48). | | |

**2    Registrant calculations within 5 Year Plan Model**

FAST 1.01-06 imports should be marked with red font. These rows are outputs to other sheets however they are not marked in red font. On the Reg_Summary worksheet, cells G11:EO28 are outputs to other sheets however they are not marked in red font, we recommend that the font colouring is updated so as to be consistent with FAST.

**3    Fitness to Practice Costs within 5 Year Plan Model**

FAST 1.01-06 recommends that exports should be marked with red font and imports with blue font. On worksheet FTPCost,

| Grant Thornton Comment | Management Response | Updated Comment |
|---|---|---|

Rows 34, 42, 92 and 229 have been formatted in red font despite these rows having no external dependents on other sheets. We would recommend that the font colour on these rows be updated to black.

On worksheet FTPQuant cells G60:EO60 we note that the row label is hard coded and the row contains a difference calculation between two inputs. We would suggest bringing in each input and having a calculation on the sheet.

Where values are a link to another part of workbook we suggest also linking label. In cells G13:G48 within the FTPQuant worksheet we note that the row label does not link to the correct row below or they are not linked at all.

**4      Overall review of 5 Year Plan generic comments**

As per the FAST 3.04-02 we note that to improve readability it is suggested to include spaces in formulae (eg. FTPQuant worksheet, cells A82:EO82). We note that additional spaces within formulae have been omitted in numerous calculations and suggest that the formulae are reviewed and updated accordingly to aid readability.

Lack of column consistency across sheets, we not that column H has been used for comments in the "Inc" sheets but is used as "DEPT" in the operating expense sheets such as "Payroll_Inputs".

The model contains a number #REF! and #DIV/0! errors for example on the "Departmental expenditure detail" worksheet,

| Grant Thornton Comment | Management Response | Updated Comment |
|---|---|---|
| cells R26:V26.  We recommend that these are reviewed and cleared prior to model finalisation. | | |