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| **Module Title:** | Operations and Business Analytics | **Module Code:** | 7BSM2003 |
| **Assignment Format & Maximum Word count** | Excel Modelling and Individual Report | **Assignment Weighting:** | 50% |
| **Coursework Submission:** | Time: 23.59 Date: 17th April 2023 Method: via Canvas/StudyNet | **Coursework return** Date returned to students: | Within four weeks of submission |
| **Module leader** | X Zhao | **First marker** | X Zhao |
| **Internal Moderator** | Approved  Date: | **Module Board name** | BAS Group |
| **External Examiner** | Approved  Date: | **Module Board date** | TBA |

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| **Assessment Criteria** |
| **Learning Outcomes: Knowledge and Understanding tested in this assignment:** |
| * Evaluate the role of data, analytics and associated technologies in adding value to a variety of organisations * Appraise the appropriate use of business analytics to support operational decision making to create and add value to a business |
| **Learning Outcomes: Skills and Attributes tested in this assignment:** |
| * Formulate, evaluate and reflect on operations management issues to be able to determine which business analytical technique is most beneficial * Critique the importance of information sharing within the organisation and appraise the impact of this information on decision-making within an organisation * Determine the appropriate tools and make recommendations to inform and support strategic decision making |
| **Feedback /Marking criteria for this Assignment** |
| Performance will be assessed using the grading criteria and mark scheme indicated below**.**  **Guidance for improvement will be given in writing on the Assessment Feedback Form or on the StudyNet Feedback Form within 4 weeks of submission.**  For each day or part day up to five days after the published deadline, coursework relating to modules submitted late will have the numeric grade reduced by 10 grade points until or unless the numeric grade reaches 40 for levels 4, 5 and 6 or 50 for level 7 (PG). If a submission is more than 5 days after the published deadline, a grade of zero will be awarded. Where the numeric grade awarded for the assessment is less than 40 for levels 4, 5 and 6 or 50 for level 7 (PG), no lateness penalty will be applied;  Plagiarism offences will receive standard penalties. |

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| **Detailed Brief for Individual/Group Assessment** |
| **Assignment Title:**  Excel Modelling and Individual Report - The University of Puddletown's Students' Union Shop  **Description of the assignment:**  Background  (Any similarities to the student shop at the University of Hertfordshire are entirely coincidental. This is a fictional example.)  The Students' Union Shop is trying to work out how many cashiers it needs to employ in order to provide an adequate service level. Customers at the shop line up in a single queue and are called forward to pay for their purchases when a till becomes free. To help determine the busy times of the day, the shop has recorded the number of customers arriving at the tills in each 5-minute interval during the shop's opening hours, from 8am until 6pm (N.B. this is the number who actually make a purchase and does not include customers who are just browsing). Records for a period of 5 weeks are available. All the data were collected during term time.  The shop usually functions with just three cashiers but it has the capacity to support up to 6. The shop is open for approximately 50 weeks each year. The management has also collected data about the time it takes for cashiers to take payment. These data come from term time and 1000 records are available. Management are concerned that customers wishing to buy food, in particular, may be going to other outlets within the university such as the Big Ears Sandwich Shop or the Noddy Bar. Management are also concerned about the turnover of their staff and would like to reduce their stress and also stop them getting bored. They would be interested to hear about any innovative operating strategies for doing this.  You are employed as a consultant for the Students’ Union Shop. The shop management would like to hear insights from you, but does have **a few specific questions** they would like to ask. These are   * What is the average customer arrival rate per hour based on the current data? * The management reckons there are more customers during the lunch break, and would like you to look into this matter. Could you spot any busier period during the day? If so, what are the busier hours?   + What is the average customer arrival rate per hour during busier period?   + What is the average customer arrival rate per hour during quieter period? * How fast on average does a cashier serve a customer in our shop?   + Have you spotted any outlier in the collected service data? If yes, did you include (or exclude) those outliers when coming up the average, and why? * How many cashiers does the shop need to have a reasonable performance?   + When taking the average daily arrival? Would you consider the average daily arrival a good measure for cashier arrangement, and why?   + During busier period if observed?   + During quieter period if observed?   The shop management is also interested in hearing your **thoughts on how the adoption of business analytics in general could positively impact the shop performance**. (For students who participant in the Young Enterprise competition AND wish to work this part in their YE group, please see alternative arrangement [here](https://herts.instructure.com/courses/102855/assignments/203509).) They would appreciate that you keep this part under 2 pages.  What You Should Produce  You are required to produce **a model using Excel**, which could be used by the Students' Union Shop management team for evaluation of their performance using the data provided or any new data that becomes available in a similar format. If there is any further information you believe to be essential, make a realistic assumption and explain clearly what you have done (in the report below).  The model should be supported by a **comprehensive report** in which you should report on their current system, pointing out any existing problems, and suggest ways of improving the service level. You must give a convincing argument to support the improvements you are suggesting, e.g. by showing the benefit of adding an extra cashier in terms of staff utilisation and customer waiting time.  Length of Report  The Students' Union Shop management team are very busy and so value concise reports. Your report (include Executive Summary, see below) should be no more than 15 pages.  You are also required to include an **Executive Summary** at the beginning of your report. It should summarise your findings on management’s specific questions listed in the Background above. The Executive Summary should be no more than 2 pages.  Data  The data on customer arrivals and cashiers' service times are available on the module site under Assignment, Business Analytics. <https://herts.instructure.com/courses/102855/assignments/203508>  General Restriction  Visual Basic for Application (VBA) code should NOT be used for solving the problem. If you have never heard of it, then consider yourself good with this restriction.  Deadline  The deadline for submission is 17th April 2023.    **Mark scheme:**  Note that this assignment is deliberately open-ended and initiative will be rewarded. The assignment will be marked out of 100.   1. Excel Model    1. A suitable queueing model (5%)    2. A working model (5%)    3. Shop management able to evaluate performance using any new data in a similar format (5%)    4. Initiation / creativity, e.g. graphs, presentation (5%) 2. Executive Summary (10%) 3. Report    1. What is the average customer arrival rate per hour based on the current data? (5%)    2. The management reckons there are more customers during the lunch break, and would like you to look into this matter. Could you spot any busier period during the day? If so, what are the busier hours? (5%)       1. What is the average customer arrival rate per hour during busier period? (5%)       2. What is the average customer arrival rate per hour during quieter period? (5%)    3. How fast on average does a cashier serve a customer in our shop? (5%)       1. Have you spotted any outlier in the collected service data? If yes, did you include (or exclude) those outliers when coming up the average, and why? (5%)    4. How many cashiers does the shop need to have a reasonable performance,       1. When taking the average daily arrival? Would you consider the average daily arrival a good measure for cashier arrangement, and why? (5%)       2. During busier period if observed? (5%)       3. During quieter period if observed? (5%)    5. Thoughts on how the adoption of business analytics in general could positively impact the shop performance(For students who participant in the Young Enterprise competition AND wish to work this part in their YE group, please see alternative arrangement [here](https://herts.instructure.com/courses/102855/assignments/203509).) (25%) |
| **Student Support and Guidance**   * For further help, contact your module leader in their drop-in hours or by email. * Use the Grading Criteria and Mark Scheme to help improve your work. * Go to CASE workshops, use the CASE website and drop-in hours [www.studynet.herts.ac.uk/go/CASE/](http://www.studynet.herts.ac.uk/go/CASE/) * Academic English for Business support is available through daily drop-ins from the CASE office. See the CASE workshop timetable on the CASE main website page for details. * Make full use of Library search to identify relevant academic material and the ‘Subject Toolkit for Business’ which contains links to other Information Databases and the Information Management contact details. (<http://www.studynet1.herts.ac.uk/ptl/common/LIS.nsf/lis/4DAF5390094771C2802575ED004212BF>) * Some tutors allow students to test their work using Turnitin. Guidance on submission to Turnitin via StudyNet can be found by using the following link. <http://www.studynet1.herts.ac.uk/ptl/common/asu.nsf/resource+library/TURNITIN+FOR+STUDENTS+2016+USER+GUIDE.pdf/$FILE/TURNITIN+FOR+STUDENTS+2016+USER+GUIDE.pdf> |