

INFOSYS330 and BUSAN302

**(Assignment #2 on BI)**

**Due on 02/June/2020 at 11:59pm)**

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Case Study – ‘KIDS Corp’

Grace Sparkle is a mother of three young children aged 2, 3 and 5. She is also reading for her master’s degree, in Information Systems at the University of Auckland. Grace started ‘KIDS Corp’ as an online store. The key value of ‘KIDS Corp’ to Grace was that it provided her with an income while she studied, to minimise her student loan. Grace got a commission from each sale and from advertising. It is now a growing brand and an expanding service provider.

‘KIDS Corp’ now has a formal organisational structure and hires staff as is necessary. The ‘KIDS Corp’ goal is to make it an ‘all about kids’ business. It provides a safe and trusted brand for parents to purchase kids’ essentials (such as clothing, toys and accessories), and get information about many other services needed by children (such as health, education and recreation). The value of ‘KIDS Corp’ to parents is that it gives them reliable recommendations regarding the many goods and services that parents need for their children.

Many suppliers of goods and services pay ‘KIDS Corp’ to allow them to advertise products on their system. Suppliers are however, restricted to those who can supply goods/services of “proven” quality. Information gathered regarding *the proven quality* of goods/services in this process are incorporated in automated recommendations given to parents. Maintaining ‘KIDS Corp’ quality of information is important to achieve the vision of the organisation to provide a safe and trusted brand for parents. Administrative work needed for ‘KIDS Corp’ is time consuming but crucial for its existence. What is unique about ‘KIDS Corp’ is that besides the hired Information Systems Manager, Anne Crowe, parents are instrumental in ensuring that information is up to date in ‘KIDS Corp’ using two simple rules for parents who are also their customers. That is, (1) it is mandatory for parents to provide feedback on the quality of goods and services they buy through ‘KIDS Corp’, and (2), parents give a small membership fee to join ‘KIDS Corp’.

Parents give 1 -2 hours of their time as a free service each month, to manage the ‘KIDS Corp’ information systems’ data. Some parents are highly skilled in the use of technology and have assisted Anne Crowe to incorporate extra features to ‘KIDS Corp’. Such enhancements and extensions include:

a) Expanding virtual store spaces:

* Using 3D scans of items bought and virtual reality technology as an interface to allow children to try out clothes, spectacles and toys before buying them.
* Making available a gadget channel on ‘KIDS Corp’, presenting and advertising gadgets aimed at turning videos into sales. The objective of this being to close the gap between product discoveries and making a sale.

b) Collecting video reviews of the quality of products and services, which in turn generate recommendations about the products for a specific person.

c) Rapidly connecting online buyers with retailers who have adequate stocks.

d) Group buying through ‘KIDS Corp’ for negotiating better discounts from retailers.

e) An expert recommends baby-sitters, who are also checked out by the local police vetting system as a routine measure of safety, to parents who need them. The expert is now replaced by an Expert System for parents registered at ‘KIDS Corp’. However, assistance is still sought from the police to vet the baby-sitters.

f) Providing recommendations regarding day-care centres and other educational institutes in the region the parent is interested in, together with a few testimonies from past students’ parents, and a review from ‘KIDS Corp’ officials.

g) Establishing a relationship with paediatric health care providers in the local neighbourhoods and developing a recommendation board to record health care providers in each area.

h) Using ‘KIDS Corp’ apps to pay for purchases and receive special discounts and promotions.

The above list provides you with a few examples of some features of ‘KIDS Corp’. With the growth of ‘KIDS Corp’ many more features can and will be added (*you may add some*) and with these new additions, numerous challenges will arise. The problems faced by ‘KIDS Corp’ and the BI models used to solve them can be assessed against the following dimensions:

* High Accuracy
* Moderate Explainability
* Moderate Response Speed
* Moderate Scalability
* Moderate Flexibility
* High Embeddability
* High Tolerance for Complexity
* High Tolerance for Noise in Data
* High Independence from Experts

**Please Note:**

* The above list will change with each business problem that you may address. Hence, you may add more dimensions or remove some, as required for the specific problem that you will address.
* You may extend this case study as needed. If you do so, please give an adequate description so that the assignment marker can understand the problem for which you are suggesting a solution.
* Please highlight any extension you make to the case study and attach it to your submission. Please note that you are not allowed to reduce the case study.
* Please ensure that you're report does not exceed 10 pages (not including the appendix)

**The Proposal:**

The overall system concept must be explained in the executive summary of the report, whilst selling your idea. This should be brief and concise.

Write a comprehensive and concise report to the CEO of ‘KIDS Corp’ on designing and implementing a Decision Support System for the organisation, for a problem that you identify. A comprehensive solution that you provide must be detailed within the report. Structure your report, using Simon’s (1977) decision making process model of four stages – Identify, Design, Choice and Implementation, which will form the structure of your report, as given below.

### ****Chapter One: (Identify)****

Chapter one should be an Introduction of your proposal, which explains the problem identified. It should set the scope and boundary of the system you propose. Detail the reasons behind selecting the specific problem you have, identifying its criticality for the organisation. You can use the case study as is provided or you may expand it if you wish. Please remember to provide any assumptions made.

### ****Chapter Two: (Identify)****

Chapter two should document a detailed requirements analysis. Choose one key stakeholder on whom to perform an information needs analysis by first describing the stakeholder and their role in the organisation, including the key decisions they have to make. This should have more detail than is given in the case study. Please extend the case study to suit. It may be useful to describe “a day in the life” of this stakeholder, highlighting the decisions they make and information they need. Describe the KPIs that the stakeholder must keep a tab on.

**You may use diagrams such as ERDs, Use Cases and User Stories, Activity Diagrams, Sequence Diagrams etc. as you need to describe the requirements.**

### ****Chapter Three (Design and Choice):****

Chapter three should document how you arrived at a Machine Learning solution for the decision support system identified. You may break the large problem into smaller problems (also known as decomposing a large problem) and select a Machine Learning solution for each small problem. In selecting a solution for the smaller problems, please do the following:

* Use the Intelligence Density (ID) framework to analyse the required ID dimensions of models.
* Check which algorithms (covered in lectures) that would best suit the solution.

**Select one or a combination of 2 (or even 3)** Machine Learning Algorithms and specify why the solution given by you would be the most appropriate. **That is, you must justify your choice**. It might also be useful to consider the advantages and disadvantages of the models selected.

**IMPORTANT NOTE ON THE SCOPE:**

Keep the scope to solving approximately three sub-problems. Cleansing the data is not a sub problem… but an important step in data mining.

### ****Chapter Four (Implementation):****

Chapter four should describe the implementation specifications. Describe the design of the machine learning / data mining infrastructure (both software and hardware). Remember to give specific information regarding the tools that you use. For example, if you are using Genetic Algorithm as one tool of choice, give what each gene would be, what each chromosome would be and what the decoder and fitness functions would specifically do (remember you may combine two or even three machine learning algorithms to find a solution). You may give one or two visualisations to explain the interface, showing the interactions of the stakeholder with the system.

### ****Chapter Five:****

Chapter five should be the conclusion. Conclusion should summarise what you have done and sell the system the organisation.

1. Conclusion should summarise what you have done and sell the system to the organisation.
2. Give an overall diagram of the infrastructure (software data pipeline – OLTP, DW, Data Mining tools used).
3. Critique the solution you have finally selected – specifying any limitations and constraints.

### ****Appendix One:****

A copy of the working case study you use if you have extended it, must be supplied. Any amendments **must be highlighted**. Amendments to reduce the scope of the study **must not be done**.

### *****Important notes:*****

The main objective of this assignment is to apply the concepts of Decision Support Systems, Data Warehousing, and Data Mining covered in lectures and in the labs, in an actual “Real-World” practical situation.

You should to treat this assignment as an opportunity to present an Information Systems Strategy and Design to a future employer. Give your final submission, a professional look. Draw your diagrams neatly using an appropriate tool. Although presentation of the report does not carry any marks, 10% of marks will be taken off, for badly presented work. The 20% best assignments in class will get 5% extra!