8 Conclusion

This research has focused on the applications of DM in the realm of healthcare. The study covered two main areas; one related to breast cancer in identifying key effective attribute selection for building effective DM models followed by the blood donor classification models. The breast cancer research suggested key attributes namely that of the uniformity cell size and uniformity cell shape to be key attributes (13 out of 26) due to their high occurrence in the reducts derived using the RST based model. The classification based on the RST model also suggest the model to be useful for attribute selection.

The relevance of attribute selection strategies plays a critical role as we traverse the requirements for big data and analytics. The ability to identify the key attributes that helps understand the specific patterns (basis the context). In the specific domain of healthcare, these provide the consumers of healthcare critical and valuable service that is required by way of effective decision making and information management. The effective implementation of these facilitate the overall effectiveness of the service chain.

The blood donorship related research provides a complete end to end approach of how DM driven models can be implemented. The RVD based blood donorship models in combination with the data driven models have provided a suggestive framework (DM-BDMS) that enable the BDMS (service centers and operational management).

The research applied classification algorithms (CART, J48) on the
blood donation dataset (with extensions) for the development of a blood donor classification model. The results using the CART based model (with 10 fold cross validation) provided an accuracy of 99.86% for a Regular Voluntary Donor (RVD) based model. The RVD based model provides a better performance (22.86%) over the reference attribute in the base dataset. The results also indicated a simpler decision tree (complexity reduction by 7 leaf nodes). The research concludes with the extension of these findings to the development of dashboards and implementable analytics. The research has also suggested a Data Mining based Blood Donor Management System (BD-BDMS).

The research also provides suggestive dashboards to disseminate critical information to healthcare stakeholders.

In the near future the data revolution will provide a number of benefits to healthcare; most importantly it will support proactive and personalized nature of services. The technology and science in tandem will permit the evolution of effective healthcare delivery models. The technical developments along with advanced DM based models will facilitate revolutionize healthcare services.

The future direction of this research will continue in enabling and empowering healthcare with advanced modelling techniques to help improve the overall quality of life keeping in mind principles of optimal cost and service to global healthcare needs.