Organization of the Thesis

In the proposed thesis we discuss the effect of foreign exchange transaction exposure by developing models in news vendor framework and these models’ sensitivity are also tested using various distributions for the exchange rate risk. The thesis is divided into 6 parts as follows:

(1) Introduction, Basic concepts and Terminology  
chapter-1 and 2

(2) Literature review and The base of the research  
chapter-3 and 4

(3) The three foreign exchange risk models  
chapter-5,6,7

(4) Sensitivity analysis of the models  
chapter-8 and 9

(5) Summary and Some published papers  
chapter-10 and 11

(6) Appendices and Bibliography

Part-1 Introduction, Basic concepts and Terminology

Chapter-1 Introduction  
In this chapter we introduce an important branch of operation research, namely management science. We also introduce different levels of research which can be done in
management science and its subbranches. A most recent application of the subbranch supply chain management of the management science-viz. “Foreign exchange risk” is also introduce. Different types of foreign exchange exposures which leads to exchange rate risk is also discussed here. At the end we introduce the classic news vendor problem in inventory management which is the main platform of the proposed research work.

Chapter-2 Basic concepts and Terminology
In this chapter the basic definitions like- different terms of inventory management and some useful concepts in calculus - optimization conditions are explained. The concept of the exchange rate error and risk hedging are also elaborated.

Part-2 Literature review and The base of the research

Chapter-3 Literature review
In this chapter we discuss the literature in the area related to the news vendor problem, its extension with pricing, application of the NVP in foreign exchange transaction exposure, etc of prominent researchers. The research work of these researchers has major contribution in the proposed thesis.

Chapter-4 The basic news vendor problem and its extension with pricing
This chapter elaborates the complete derivation of the news vendor model under the discrete and continuous demand distributions. The closed form solutions of the expected profit, the minimum cost etc. are derived. Then the extension of NVP with the pricing parameter is also discussed. This extension is the main base of the application in foreign exchange transaction exposure.

Part-3 The three foreign exchange risk models

Chapter-5 Exchange rate risk in NV format under additive demand error
In a global supply chain consisting of one retailer and one manufacturer, both from different countries faces unanticipated changes in the market the currencies of the firms involved are affected. Since there is a time lag between the payments made while placing the order and the time when the order is realized, risk in the form of the exchange rate
fluctuation affects the optimal pricing and order quantity decisions. In this chapter we explore the derivations of analytic expressions involving the transaction exposure when the retailer or manufacturer undertakes to share the exchange rate risk and the demand error is modelled in the additive form in the news vendor framework.

**Chapter-6 Foreign exchange transaction exposure under multiplicative demand error**

This chapter contributes towards the construction exchange rate risk model in news vendor format under isoelastic demand with multiplicative demand error, when the retailer or manufacturer undertakes to share the exchange rate risk.

**Chapter-7 Transaction exposure model under hybrid demand distribution**

This chapter is dedicated to the derivation of analytic expression of the foreign exchange transaction risk in news vendor format under hybrid demand distribution. This model is the generalization of the models derived in chapter-5 and chapter-6.

**Part-4 Sensitivity analysis of the models**

**Chapter-8 Effect of various exchange rate fluctuations when retailer bears the risk**

We have derived the exchange rate risk models and its closed form solutions in the chapters 5,6,7. In this chapter we test the sensitivity of these models when the retailer bears the exchange rate risk under uniform, normal and beta distributions.

**Chapter-9 Effect of various exchange rate fluctuations when manufacturer bears the risk**

We have derived the exchange rate risk models and its closed form solutions in the chapters 5,6,7. In this chapter we test the sensitivity of these models when the manufacturer bears the exchange rate risk under uniform, normal and beta distributions.

**Part-5 Summary and Some published papers**

**Chapter-10 Conclusion and Direction for future research**
In this chapter we provide some suggestions and scope for further research

**Chapter-11 Published Research Papers**
This chapter contains set of some published papers by the author.

**Part-6 Appendices and Bibliography**

We include appendices containing the MAPLE code for some cases of sensitivity analysis of the developed models in the thesis. The bibliography related to the research work is listed at the end of the thesis.