1 GAPS IN LITERATURE

The extant review of literature suggests that optimal sourcing decisions have been extensively studied for single period scenario. Researchers have studied the effects of demand uncertainty, supply uncertainty and lead time uncertainty in the context of single period. The modes developed are based on the basic newsvendor model. These studies are applicable in the retail setting, where the products are procured and sold. However, these studies have not extended to multi-period context. But, supplier sourcing decision for a firm is a part of the aggregate planning, which is done for a longer time horizon. Also, the portfolio of products in a retail firm is primarily occupied by non-perishable products, for which the firm can carry the inventory for a fairly long period of time. Therefore, it is important to build an inventory model in the context of multiple periods where the option of carrying the inventory is available to the firm.

Also, literature suggests that maintaining a back-up supplier for emergency can help a firm in countering uncertainty in the supply chain (Lee, 2002). The back-up suppliers supply the required quantity of material instantly and without any uncertainty. These suppliers build up sufficient amount of stocks for dealing with uncertainty, hence incurring a high inventory cost. Therefore they charge the firm a higher amount compared to the regular suppliers in exchange of the reliability in supply. However, the existence of back-up supplier has been previously studied for dealing with uncertainty in lead time of the regular supplier. Since the presence of back-up supplier also aids the firm in dealing with supplier yield uncertainty, it is important to include the presence of back-up supplier in such model.
Therefore, it is necessary to develop mathematical models which include demand and supply uncertainty, multiple suppliers and back-up supplier in the context of both single period and multiple periods.