SUPPLY CHAIN MANAGEMENT: AN AUSTRALIAN RETAIL PERSPECTIVE

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ABSTRACT

The out-of-stock issue is considered as the one major cause of excessive lost sales opportunities for manufacturers and retailers in the grocery retail industry. Phenomenographic research methodology was used, with findings identifying improvement opportunities across the supply chain to reduce out-of-stocks; a holistic approach of tactical and strategic measures to organisational capability albeit people, processes and technology to improve inventory management and sustain perpetual stock availability. Store ordering, a key contributor to out-of-stocks, is the focus of this paper.

INTRODUCTION

This study examines the out-of-stock (OOS) issue on supermarket shelves in the grocery retail industry with particular focus on supply chain management. Research was undertaken for one of Australia's largest retail organisations (Company XYZ). The OOS issue is considered as the one major impact to revenue potential with lost sales opportunities at the checkout in excess of $100 million per year. The impact of OOS situations results in decreased customer satisfaction that is manifested when a shopping experience is negative, particularly when that experience is repeated. Further, there are subsequent compounding effects on business administration obstructing operational effectiveness. Store order processing is a significant component of overall supply chain management, its accuracy is imperative to ensuring sufficient stock availability on supermarket shelves. Hence the focus of this paper.

Coca-Cola Retailing Research Council (1996) identified warehouse supplied items were the main contributors to the OOS issue with 97% of OOS root causes resulting from the retailers' business processes and 54% by store personnel not correctly forecasting demand (App 1). There are three main focus areas for improvement; store ordering, merchandise planning and the alignment of store replenishment with consumer demand [2]. From an Australian perspective ECR Australasia (2001) research estimates that 5–10% of items at any time are not available with potential lost sales at $1 billion annually. 80% of OOS stem from four key contributors within the boundaries of stores presenting the greatest improvement opportunities for retailers, being: the products are in store but not on the shelf; the product was not ordered by the store; shelf capacity is inadequate to house required stock; and store forecasting inaccuracies [3] (App 2). Further, ECR Australasia (2001) presents seven key recommendations as a guide to efficient replenishment and reducing OOS, endorsing CPFR philosophy [3]. Schary and Christopher developed a process model (1979, p. 62) into consumer behaviour to an OOS is subject to situational factors such as the intended product usage and urgency of the need; brand loyalty and store loyalty resulting in a number of decision options available to consumers in terms of OOS product substitution [9]. According to Emmelhainz et al (1991) 14% of consumers shop at a competitor store in search of an OOS product resulting in decreased revenue potential to manufacturers and/or retailers [4]. Research provides a benchmark to reducing OOS instances to below 2% with the use of technology for computer assisted ordering [2], [3]. Current trends in the retail industry suggest software solutions based on demand-driven stock replenishment where systems have the capability to drill down to the specific store and store demand based on point-of-sale (POS) data to provide real-time stock replenishment [5]. Other trends focused on the supply chain are ECR, CPFR, VMI, SCOR and TOC. Successful implementation of such initiatives largely depends on the underlying supply chain strategy in alignment with corporate strategy and collaborative partnerships along the supply chain.

METHODOLOGY

The supply chain model (App 3) was developed to set the conceptual framework of the study mapping the six key stakeholders in the supply chain of Company XYZ, namely: merchandise, suppliers, carriers, distribution centres, stores and consumers. This framework was combined with phenomenographic research methodology to explore the supply chain [10]. Interviews were conducted with representatives from the six cohorts requiring each participant to reflect specifically on how they perceived the problems and solutions to the grocery OOS issue. Phenomenographic methodology was employed to analyse interview transcripts to derive a holistic view of the study question enabling the mapping of qualitative variations in which people experience, conceptualise, perceive, and understand various aspects of the phenomena [6]. Results of the analysis were plotted onto an outcome space with categories of approach representing the ways in which the problem and solution were perceived. Categories were then ranked in an hierarchical manner, from simplest to the most complex way of perceiving the issue. Traditional application of phenomenography has been in pedagogical research, however, recent examples of non-pedagogical application has been in the social sciences by Beaty [1] and human competence in organisations with the Volvo manufacturing plant by Sandberg [7; 8]. This study is a further use of phenomenography in a non-pedagogical domain.

RESULTS

Analysis highlighted five key components (App 4) contributing to the overall OOS issue and corresponding key measures to overcome the problem; Store Ordering, Product Range/Fixture Mechanics/Shelf Management, Stock Replenishment/Promotional Activities/Demand Forecasting, Distribution Channels, and Supply Chain [10]. The store ordering component is analysed in Table 1.

Table 1 – Outcome space – store ordering key problems and solutions

Solutions (How)	Problems (What)				
	Computer Aided Ordering does not factor seasonal fluctuations	Relies heavily on sound experience and understanding of ordering staff	Store order placement restrictions	Manual and time consuming process performed by store staff	Requires knowledge of promotional activities and historical sales trends
Fine tune Computer Aided Ordering application	A				
Improve education process and staff training		B			
Improve ordering process			C		
Automated store orders				D	
Automate demand forecasting					E

Source: [10, p. 60]

Category A is an approach to enhance the Computer Aided Ordering (CAO) application. CAO is set up for each store to automatically generate supplementary orders on behalf of the store for fast lines to cater for busy trading days. The order quantity for a defined product is based on the average weekly sales (AWS) over a 13-week period and does not factor seasonal demand fluctuations requiring manual adjustment reflective of seasonal demands. Therefore, enhancing the CAO application incorporating seasonal demand forecasting is seen as an approach to eliminate the current manual intervention. Category B is an approach focused on improving store ordering education for store staff. The store ordering process is a manual process and is dependent on experienced and knowledgeable store staff to make sound product replenishment decisions based on information available on shelf labels and reporting tools such as Promotions Report and Out-of-Stock Report. The objective is to provide extensive staff training ensuring that those responsible for ordering gain a thorough understanding and interpretation of the information available to them during order capture. Category C is an approach focused on automating components of the store ordering process. Store ordering is bound by different order rosters and transmission windows determined for each distribution channel. Such complexities can lead to confusion for store staff, particularly for the casual and inexperienced. The objective of this

approach attempts to reduce associated labour intensive complexities by automating components of the order capture process. This would facilitate the capture of a single order for all stock replenishment requirements regardless of the distribution channel. Category D is a more complex approach focused on automating the entire store ordering process. The store ordering process is perceived to be complex with a variety of manual considerations during the order capture process. Tools and data available to staff require extensive time to analyse and act upon exposing the store to a higher frequency of ordering errors. Scanned data captured at the point-of-sale (POS) provide a true account of goods sold and replenishment requirements for each product. Therefore, automating the store ordering process based on this data will eliminate manual processes and provide consistency across the business regardless of the store, order frequency, store staff and management. Category E is the most complex approach focused on automating demand forecasting. On a daily basis store staff are faced with the complexities of estimating demand (normal, seasonal and promotional) to maintain sufficient stock levels on the shelves. Knowledge of planned promotional activities and historical sales trends are required to effectively maintain stock on show to sustain promotional activity and is further complicated by the level of promotional activities undertaken by the business. One major deficiency identified products that become OOS during a promotional period, their potential sales during that promotion are not realised. Examining the intricacies of demand forecasting, implementing an automated demand forecasting process requires complex algorithms to achieve accurate forecasts for standard stock levels and promotional activity. Sophisticated forecasting is essentially to accurately assess the impact of an OOS product, particularly market leaders, on substitute products and determine the demand accordingly.

DISCUSSION

Store Ordering as one of the five key contributors to the total OOS issue has been mapped onto an outcome space depicting the simplest to the most complex approach to resolving the OOS issue providing a platform for the proposed recommendations. Proposed tactical recommendations are classified as short-term measures to addressing the store ordering component while strategic recommendations are classified as long-term measures, with greater level of complexity, to resolving the entire OOS issue for Company XYZ. The tactical recommendation is focused on simplifying the store ordering process at store level. This is considered to provide short-term benefits and is a stepping stone towards strategic measures. Analysis has identified that the store ordering process is too complex and is bound by order rosters and transmission windows for each distribution channel. This can be overcome by automating the order capture component enabling a single order capture irrespective of the source of supply. Automating demand forecasting is a strategic approach to overcome inadequate demand forecasting that is inherent in current manual processes. This requires the implementation of a sophisticated demand forecasting application incorporating the necessary algorithms to assess different replenishment requirements to meet consumer demand. The benefits extend beyond achieving the right amount of stock at the required time, as it is a step towards achieving perpetual inventory. Perpetual store replenishment is a strategic solution to overcome current manual store ordering processes. This requires the sophistication of a technology assisted ordering application to draw replenishment requirements from POS raw data. Integration of the merchandise application for planned promotions and demand forecasting application would serve as a pre-requisite to achieving perpetual inventory. The benefits will be realised in increased productivity at store level enabling redirection of resources to other store operation activities. Supply chain integration is a holistic strategic measure to overcome inefficiencies identified in supply chain such as poor communication, lack of collaboration and lack of performance measures. A well formulated supply chain strategy that is aligned with corporate strategy is an imperative requirement to identifying critical success factors, performance measurement and management across the supply chain. The findings of this study have provided supporting evidence that the OOS issue has significant consequences on revenue for manufacturers and retailers in the grocery retail industry. Research into Company XYZ OOS issue has identified similarities to ECR Australasia key recommendations with particular emphasis on measuring and analysing the root causes of OOS, integration of demand and replenishment planning processes, understanding responsibilities at each stage of the supply chain, investment in appropriate and strategic enabling technologies and collaborative involvement of trading partners in the supply chain.
A full list of references and appendices are available on request from the authors.