APPLICATION OF JUST- IN- TIME TECHNIQUE IN THE SUPPLY CHAIN MANAGEMENT: CASE OF NEWSPAPER INDUSTRY IN KENYA.

BY

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A MANAGEMENT RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS OF THE MASTERS OF BUSINESS ADMINISTRATION (MBA) DEGREE, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

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DECLARATION

This project is my original work and has not been presented for a degree in any other university

Signed ---------- date 5th December, 2008

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This project has been submitted for examination with my approval as a university supervisor

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DEDICATION

This project has been dedicated to my parents, Mr. and Mrs. Joseph Wasike Nageri, Husband Patrick Kibet Kigen, Sister Christine Nageri for their continuous belief in the power of education and for both financing and supporting through prayers all my education efforts.

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ABSTRACT

In confronting the challenges of global competition, companies are focusing more on the needs of customers to improve product quality and customer service. One of the major challenges in the newspaper industry is the dynamic competitive environment in which the firms operate. This has compelled the firms to adopt various strategies like training and development, cost reduction, total quality management, supply chain management and new product development in order to gain competitive edge among others. Although newspaper industry uses various strategies to cope with the competitive environment, it is not known whether it applies the Just-In-Time technique in the industry's supply chain operations.

Just-In-Time, the formalized process of waste reduction, has achieved a strong foothold in the manufacturing sector. The service sector, however, has not been as quick to recognize the benefits of JIT. Services are much like manufacturing in that both employ processes that add value to the basic inputs used to create the end product. Just-In-Time focuses on the process, not the product and requires enormous employee commitment.

The objectives of this research were to establish the extent of application of the JIT technique in the daily newspaper industry operations in Kenya and to establish the level of awareness of the JIT concept in the supply chain of daily newspaper industry operations in Kenya

The population of interest in this study consisted of the four daily English newspapers: The Nation, The Standard, The Kenya Times and The People. The sample size was 48 respondents. This was believed to be representative of the population of the study. Primary data was collected using a structured questionnaire. The questionnaires were personally administered by the researcher to the respondents who included any staff within the following departments: production, advertising, editorial, and distribution of the daily newspapers firms.

The questionnaire was divided into two parts. Part A contained questions on the characteristics of the respondent. Part B contained questions on awareness of JIT technique and the extent of its application.

Out of 48 respondents, 33 responded to the questionnaires. The response rate was therefore 68.8% with a none-response rate of 32.2%. The study was limited to the perspective of the newspaper industry.

The results on JIT awareness and application showed that the level of awareness of the respondents is low, hence need for more sensitization on the importance of JIT technique in the newspaper industry. From the findings, most respondents have heard or read about the concept from the internet, seminars or from colleagues but not in enough detail to equip themselves with the required level of JIT knowledge. It also appears that the newspaper industry apply some facets of the JIT concept within different departments to meet the set deadlines of specific tasks to a small extent.

It was recommended that Just-In-Time technique should be part of overall strategy in the newspaper industry to enable growth, cost reduction and competitive advantage. It should be embraced by top management and applied along supply chain process as a continuous strategy. However, to achieve the efficiency level, firms need to have continuous improvement as an ongoing process, focus on training and motivation of employees and introduce JIT technique elements. Newspaper industry firms can avoid wastes by adopting standard process, integrate functions across the organization and adopt the Just-In-Time technique.

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INTRODUCTION

1.1 Background

Intense global competition has forced business organizations of all sizes and varieties to strive to stay on the cutting edge to gain competitive advantage in the market place. Managers in engineering, human resources, finance and production have joined marketers who long recognized that satisfying consumers is the best way to develop and maintain a successful organization in highly competitive markets (Ward, 1999). In Kenya, the newspaper industry has experienced stiff competition since the inception of electronic media whose impact was largely felt in the year 2000 (Mbugua,2006).

This is indicated by the increase in FM radio stations and TV channels. Thus, for a media firm to survive and prosper in this competitive environment its systems should be highly effective at addressing consumer behavior and encouraging purchase and repurchase of the firm's products and brands. Hence the need to implement the Just-In-Time (JIT) concept to stay close to customers as the firm provides products and services that consumers will purchase and use appropriately.

1.1.1 Just-In-Time Technique

Just-In-Time technique is a manufacturing philosophy involving the total elimination of waste. Just-In-Time is a system of supplying to each process what is needed, at the time it is needed, and in the quantity it is needed. Production lead time is minimized and significant savings can be made from reduced inventory. Just-In-Time requires all activities in the production process to be geared toward adding value for the customer. Critical components of the system include total quality management and employee involvement. The concept was invented by Kiichiro Toyoda and developed further by Taiichi Ohno at the Toyota Motor Company following World War II.(Canal,Rosen,Anderson,2000).

The term Just-In-Time technique stems from the notion that all activities are perfectly coordinated, and take place just when they are needed. Using the principle of JIT, which

presumes that to achieve reductions in lead times, the system should deliver to every operator in the supply chain process whatever he or she needs just when it is needed. It saves the money tied up in downstream inventories and protects against unnecessarily long lead times. Shorter lead times mean improved responsiveness and flexibility.

Confronting the challenges of global competition, companies are focusing more on the needs of customers to improve product quality and customer service. The manufacturing sector has long been aware of the need to reduce waste as a means to reduce costs and improve product quality. Just-In-time, the formalized process of waste reduction, has achieved a strong foothold in the manufacturing sector. The service sector, however, has not been as quick to recognize the benefits of JIT. Services are much like manufacturing in that both employ processes that add value to the basic inputs used to create the end product. Just-In-Time focuses on the process, not the product. It can therefore be applied to any process within manufacturing or service operations (Canel, Rosen, Anderson 2000)

Just-In-Time aims to manage lead times and eliminate waste. When JIT is properly managed, an organization reflects further increase in sales as the consumers are satisfied with the availability and reliability of the product (Pragman, 1996). Thus the major goals of JIT include: total elimination of waste, total quality control, and worker involvement in decision making. Just-In-Time is a long-term approach to process improvement. It uses timeliness as a lever to lower costs, improve quality and improve responsiveness. However, JIT requires enormous commitment. It took Toyota more than 25 years to get it right. The focus of JIT is to improve the system of production by eliminating all forms of waste and reducing lead times. Edwards (1982) states that any unsold product, however efficiently produced, represents a waste of resources.

Managing time has enabled top Japanese companies not only to reduce their costs but also to offer broad product lines, cover more market segments, and upgrade the technological sophistication of their products (Cousin,Stanwix,2001). Companies concentrate on reducing if not eliminating delays and using their response advantages to attract the most profitable customers. Examples of time-based competitors are Sony, Sharp, Toyota, NEC, Toshiba and Honda, all in Japan. For these companies time has become the over-arching measurement of performance. Longer lead times increase costs, cause delays and creates system inefficiencies (Sakakibara, Barbara, Schroedder,1993).

For any organization therefore, the principle task of producing products is to ensure that they are available at the right place, at the right time and in the right quantities to satisfy customer demand (Shapira, Seshadri, 2001). The objective of meeting the level of required customer service provided by the distribution system is as crucial as minimizing distribution costs and maximizing revenue (Stewart,1965).

1.1.2 Supply Chain Management

A supply chain is a network that includes vendors of raw materials, plants that transform those materials into useful products, and distribution centers to get those products to customers. It is a sequence which involves producing and delivering of products. The simultaneous integration of customer requirements, internal processes and upstream supplier performance is commonly referred to as supply chain management (Tan et al, 1999). Supply Chain Management (SCM) covers issues related to purchase, partnerships and customer satisfaction in addition to logistics related issues. The supply chain, therefore, comprises all activities associated with the flow and transformation of goods from the raw material stage through to end user (Handfield & Bechtel, 2002). A significant number of organizations in America rank their supply chains as world class and view their supply chain as important, or critical to their organizational success (Thomas,1999).

Market globalization, intensifying competition, and increasing emphasis on customers' orientation are regularly cited as catalyzing the surge in interest in SCM (Gunasekaran et al., 2004; Webster, 2002). Thus effective SCM is key to building a sustainable competitive edge through improved inter and intra-firm relationships (Ellinger, 2008).

In simplest terms, SCM lets an organization get the right goods and services to the place they are needed at the right time, in the proper quantity and at an acceptable cost (Computerworld Dec17, 2001). Efficiently managing this process involves overseeing relationships with suppliers and customers, controlling inventory, forecasting demand and getting constant feedback on what is happening at every link in the supply chain both internally and externally.

The supply chain involves several elements. These include:

Location: It is important to know where production facilities, stocking points and sourcing points are located. This determines the paths along which goods will flow.

Production: An organization must decide what products to create at which plants, which suppliers will service those plants, which plants will supply specific distribution centers and sometimes how goods will get to the final customer. These decisions have a big impact on revenue, costs and customer service.

Inventory: Each link in the supply chain has to keep a certain inventory of raw materials, parts, sub-assemblies and other goods on hand as a buffer against uncertainties and unpredictability. Shutting down an assembly plant because an expected part shipment did not arrive is expensive. But inventory costs money too, so it is important to manage deployment strategies, determine efficient order quantities and reorder points, and set safety stock levels.

Transportation: Choosing the best way to transport goods, materials, parts and products from one link in the supply chain to the next often involves trading off the shipping cost against the indirect cost of inventory.

Once the elements are determined, SCM process involves three main paths: product, information and financial. The process application determines the best way to route materials, information and quantities of goods needed at specific points.

In this study, the supply chain will focus on pre-production, production and post- production processes in the newspaper industry. The pre-production process involves activities that must be accomplished before the material goes for printing, which are: purchasing, advertising, editorial and information technology.

In Kenya, as far as production is concerned, the technologies and production systems used in the media industry are quite advanced compared to the rest of Eastern Africa (Mbugua,2006). Technological changes and evolution in the printing, publishing and communications industry together with increased market requirements in terms of quality, costs and distribution in the print media have led to considerable change in the technologies and processes used for production. Digitalization, automation, synergistic technologies and innovations are further signs of improvements, developments and new production methods and processes.

The post - production stage is the last phase in delivery of newspapers to the market and mainly involves distribution and transportation. It is important to understand the relationship between operational market process outcomes and market success because logically operational success is an essential precondition to market success. At the same time, operational success cannot be viewed as an end goal because the bottom line is ultimately driven by market success.

Drawing from the resource based view of the firm, the outputs of the operations model are inputs into the marketing model, allowing an integrated perspective of the link between essential operations and marketing factors. The effects of organization process factors on the achievement of operational outcome, targets: product quality, unit cost, and time-to-market (Mohan, Mitzi,2001).

1.1.3 The Newspaper Industry

The print media industry was liberalized in Kenya in 1991. The Kenyan print media has since become "vibrant" dynamic and economically sound. Many newspapers of different categories have come up. They attract different unique interests, and have intensified competition in the limited market.

The mainstream daily print media firms are: Nation media group which writes and circulates the Daily Nation Newspaper (owned by Nation Media Group) with a daily circulation close to 170,000 copies, the East African Standard (owned by Baraza Ltd) circulates 50,000 copies daily, Kenya Times newspaper 3000 copies daily, and the People Daily which circulates 8,000 copies. The Nation Media group also publishes a *Swahili* language paper, *Taifa Leo,* which reaches a circulation of 25,000 copies daily while Business Daily circulates 10,000 copies and lastly Daily Metro circulates 8,000 copies which are published from Monday to Friday. There are also numerous weekly and monthly magazines covering current affairs, business, social, religious, entertainment and leisure topics currently in the market.

The newspapers, irrespective of their shelf life, have the highest sales on the presumed issue date and time. For instance, daily newspapers like the Daily Nation, East African Standard or Kenya Times are purchased more if they arrive in the market place before 7a.m irrespective of the editorial content. Thereafter, the customers who would have purchased the paper, unless

loyal, opt to either read a colleague's copy or get so busy with office work and will not remember to purchase one. Newspapers are a necessity in the morning for loyal customers; the non-loyal group purchase depending on the availability of money; and the switchers, purchase the brand that is early in the market place.

The print media industry in Kenya has improved over the last ten years especially after the government instituted several measures to open the economy to market forces. By 1994, the government had dismantled most foreign exchange rates, removed importer licensing and liberalized domestic marketing of major products. The Kenyan print media has since become vibrant, dynamic, and economically sound (Mbugua, 2006).

1.2 Statement of the Problem

The electronic media, which provides real time news, poses a major challenge to the print media (Spann, Tellis, 2006). The expansion of electronic media, including television, frequency modulation (FM) stations and internet services in Kenya has greatly reduced total market share of the print media (Mbugua, 2006).

The daily newspapers' market is quite dynamic, with a fairly short product life cycle of about 10 hours, between 5 a.m. and 3 p.m., and most purchases being done by 11 a.m. The unsold copies, in any given day, are returned to the respective companies. They are later sold as waste for other purposes at a much lower price; a great loss to the publisher, as vendors, agents and distributors incur no loss.

High numbers of unsold newspapers and non-achievement of sales targets can be directly attributed to lateness in delivery. Physical contact with a product influences whether a purchase will occur or not (Aaker,1996). The consumer operates on a crowded schedule and would prefer to start the day with a newspaper.

Lateness could occur at any stage of the supply chain; pre-production stage, production stage and post-production stage. Arrival times of newspapers in the market place, therefore, pose a great challenge. To remain competitive, the print media must reposition itself and focus on time as a critical factor especially for the daily newspapers.

In recent years, numerous approaches have been proposed to improve operations performance. Three notable ones include: Just-In-Time, supply chain management, and quality management. Just-In-Time has registered great success as one of the techniques among others, for improving a firm's performance and profitability (Sersland, 1991; Sriparavastu & Gupta 1997). Previous research studies also indicate that a commitment to quality and an understanding of supply chain dynamics have a big effect on performance (Loknath, 1997).

The persistent lateness of delivery of the newspapers and the significant number of unsold copies makes one doubt whether the companies in the newspapers' industry apply techniques that can assist in the improvement of the newspaper delivery to customers by ensuring arrival at the right time. Since time has a great effect on consumer behavior in the industry, there is need to study whether JIT techniques are being applied in the supply chain: pre-production, production and post -production processes in the daily newspaper industry.

1.3 Objectives of the Study

The objectives of this study are:

1. To establish the extent of application of the JIT technique in the daily newspaper industry operations in Kenya.
2. To establish the level of awareness of the JIT concept in the supply chain of daily newspaper industry operations in Kenya.

1.4 Significance of the Study

This study will be of particular interest and importance to various groups, inter alia:

- The daily newspaper publishers in Kenya as they strive to improve the efficiency of their supply chain operations so as to remain competitive in this era of liberalization.

- The players in the print media industry interested in implementing the JIT technique. The findings of the study would provide them with benchmark information.

- Electronic media provide real time news hence the study will provide benchmark information with time factor being added advantage.

- Other industries to benchmark JIT technique implementation as a competitive advantage for business success.

- Researchers and academicians who would wish to do further research in the area of JIT implementation.

CHAPTER TWO

LITERATURE REVIEW

2.1 The Evolution of Just-In-Time Technique

In the 1970's the seller's market changed to a buyer's market and as a consequence, the weighting of company goals changed from emphasis on best possible capacity utilization to a focus on short times delivery. At the same time, inventory proved to be increasingly risky, because technology advances turned goods into non-sellers often overnight. Thus short lead times became a success strategy in entrepreneurial competition leading to Just-In-Time (JIT) Technique. Just-In-Time (JIT) has been implemented successfully in Japan for the past 20 years. It is a technique as well as a technique that guides an organization in organizing and managing its business more effectively, and in planning and controlling its operations more efficiently (Fullerton, McWatters,2002).

Traditionally, businesses compete on price, quality, variety, after service, among other things. Today, these conditions are merely prerequisites. Few businesses exist today without offering low prices, high quality, and good service. The key competitive factor has become speed(Noah,2002). All else being equal, the faster a business responds to customers, the more profitable it is. The shorter the lead-time in which an organization can supply its products, the higher the probability that it will survive (Lode, Yew,1994). High velocity manufacturing is a common goal for all manufacturing and service businesses.

JIT tries to smoothen the flow of products from the suppliers to the customers, thereby increasing the speed of the manufacturing process. The objectives of JIT are:

- To be more responsive to customers(delivery times);
- To have better communication among departments and suppliers;
- To be more flexible;
- To achieve better quality;
- To reduce product costs.

The operations planning and control system is an information system running throughout the manufacturing environment. Just-In-Time is not only a control technique, but also a way to

improve the manufacturing environment. JIT control systems are only effective in JIT environments. For example introducing use of standardized containers to transport components and replenishing materials using cards (Kanban system) into a non-JIT environment means nothing to the company because it only leads to simplification of ordering procedures (Lu ,1986).

American companies face increasing pressures to reduce manufacturing costs and improve delivery performance due to mounting oversees and domestic competition mainly from Japanese firms. They have widely embraced JIT technique to improve competitiveness. Implementation of JIT practices has become a corporate strategy in several companies (Dertouzos et al., 1989; Hall 1983; Schonberger, 1986; Zipkin, 1991).

There are many elements in JIT production that reduce the complexity of operations. In assembly environments, smoothed line build rate and mix model assembly even out the workload and bring the production rate closer to market demand (Voss and Clutterbuck, 1989).

2.2 Just-In-Time Concepts and tools

The Just-In-Time strategies comprise methods and techniques that aim to increase the potential for short lead times delivery. The JIT technique has various tools that lead to improvement in delivery times as explained below:

2.2.1 Level-Scheduling model

The objective of Level scheduling considered in JIT production is the optimization of processes within a system that supply their outputs. The main idea is to keep the quantity of each product manufactured per unit time as close as possible to the demand for that product per unit time. This involves scheduling problems with penalties for both earliness and tardiness. The schedule sets the flow of material coming into and passing through the manufacturing system.

Shapira (2001) states that a JIT system, being a pull system, initiates a supply process only if there is another process that requires the supplying process' output (raw material, products , and subassembly).

2.2.2 Line Balancing

Under this condition, tasks must be designed so that the work assigned to each workstation will require about the same amount of time to complete. There is no bottleneck and no buildup of work-in-process (WIP) inventories.

2.2.3 Linearity

This refers to production at a constant rate or the use of resources at a level rate that is measured at least daily. As companies struggle to remain competitive, one of the strategies by which gains in speed, quality and costs can be achieved is to form teams of employees to pursue and continuously improve linear production. Linear production is important because delayed production schedule will put tremendous pressure on manufacturing that produces shop floor chaos that generates significant non-value-added cost.

2.2.4 Car Sequencing/Cyclic Planning Model

Car sequencing approach proposed by Parello et al (1988) is based on the assumption that the different options (i.e. press parts) required by the different variants do affect station loads, and that the part demand for the output of the feeder process also has to be taken into account. The cyclic planning attempts to sequence the products to be manufactured by a machine in such a way that keeps total setup time at a minimum. The objective is to produce a sequence for the final assembly level while taking into account maximal station-load (capacity) and part-usage explicitly by sequencing constraints. Clearly, considering station-loads reduces the risk of stopping the conveyor, while the part-usage aspect avoids shortages.

In the printing industry, daily newspapers designed to have both editorial and advertisements, the agreed proportion has to be attained for the newspaper to be ready to be released to the market for purchase. When advertising supports the editorial content and there are no enough adverts, filler adverts shall be used. Individual newspaper pages have deadlines of production for smooth operation of the day's production. The departments directly involved in newspaper production have deadlines for their respective processes to ensure smooth day's operation, that is, distribution, transportation, purchasing, advertising, Information Technology (IT) and editorial. In the event that one department fails to meet their deadlines then this causes delays

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in the other departments and hence delays in delivery of newspapers to the market. Adoption of JIT by the industry would ensure smooth flow of the processes and hence lead to timely delivery of newspapers to the market.

2.3 Time management in Newspaper Industry

Lin and Carley (1997) examined the effect of time constraints on organizational decision making using a simulation of decisions regarding a moving aircraft. They demonstrated that time pressure affects performance negatively. In the Newspaper printing, mainly in the daily papers, time is very significant in realizing the final goal. There are several processes that have got to meet their respective deadlines for the newspaper to reach the streets on time.

The two systems LIFO (Last in First Out) and FIFO (First in First Out) are extensively used in the Newspaper print media. In Advertising department the priority is given to adverts that were booked in first (FIFO system) such that the earlier you book your advert the sure chance of it appearing. In Editorial none of the two systems applies. For a story to appear in the newspaper, it is purely under the discretion of the editors and the editorial policy of specific media house and importance of the story . In distribution, the arrangement of parcels in a vehicle is such that the first drop point enroute, the parcel at the vehicle's door, that is the last parcel to be loaded is dropped off first(LIFO system) to smoothen the delivery process.

Interruptions in printing come in as a result of delayed adverts, breaking editorial news that have got to be included, press maintenance activities, computer systems breakdown and finally vehicle breakdowns meaning late delivery. Time management then becomes a crucial item to ensure early arrival times with all variables constant.

2.3.1 Definition of Time Management

Economists have examined time as a scarce resource (Ghez and Becker, 1975) and treat the allocation of time as a rational decision. Time pressure leads to changes in strategies employed by decision makers such as the overweighting of negative cues (Wright, 1974; Maule and Svenson, 1993)

2.3.2 Importance of JIT technique in time management

Several researchers have emphasized the gains from the adoption of JIT systems. Benefits like reduced work in process and finished goods lower space requirements, higher productivity, and superior quality have been widely cited (Voss et al, 1989). With the adoption of JIT, firms become "agile" to their customers needs and are able to provide shorter and more reliable lead times and faster introduction of new products.

However, JIT environments also necessitate close coordination between customers and suppliers. With reduced inventory buffers and narrow window of delivery, any mismatch between shipments into assembly plants and increased requirements must be quickly addressed.

2.4 Consumer Behaviour

In practice, companies commonly set quality levels by simply matching the competition. Benchmarking exercise and data drawn from trade associations allow managers to compare the service levels of their operations to those of their competitors. Still, managers may wonder whether they have converged on the right service level and whether there is something to be gained from deviating from the industry standard.

The "right" levels of service depend on how customers respond to variations in suppliers' quality levels. In many cases instances of poor service may lead customers to change suppliers, and this switching behaviour drives supplier market share and profitability (Wuyts,Geyskens,2005;Ward,1999;Hess,Ganesah, Klein,2003).

A customer repeatedly chooses among a set of suppliers, and the outcome of each visit to a supplier is some (instantaneous) utility (Noah,2002). The utility offered by each supplier is a random variable that reflects the quality of that supplier's offering, that is, whether or not a particular newspaper arrives on time. The customer is not well informed about supplier quality levels, and she/he uses a crude form of Bayesian revision to keep track of which is the preferred supplier. Each time she enters the market she myopically chooses the supplier that she thinks is most likely to be best (Stern et al,1987).

When the appropriate random variables are members of exponential families of distributions, each supplier's fraction can be shown to be increasing and convex in its quality level, and decreasing and concave in its competitors' quality levels. Thus a supplier "shares of customer responds increasingly strongly to changes in quality levels consumers in the short run remain "loyal" and stay with one supplier. But they do respond to the history of the service they actually receive, and the resulting equilibrium are ones in which consumers continue to switch among suppliers. According to Heskett et al. (1994), Jones and Sasser (1995), there's a strong relationship between the level of quality offered by a supplier and the resulting loyalty displayed by customers.

2.5 Studies done on JIT

Consumer response to uncertain quality, builds on individual perception and decision making. According to Horowitz (1973), Meyer and Shi (1995), and Banks et al (1997), people appear to behave in a roughly Bayesian fashion, with some biases, such as a tendency to behave more myopically than is optimal. Also people maintain mental examples of how entities in the world behave. They then interpret an experience with an entity by comparing their perceptions with the typical or exemplary characteristics of their mental picture of that category behaviour (Kahneman & Tversky, 2004; Tversky & Kahneman, 2000)

Cumulative Utility Consumer Theory of Gilboa & Schmeidler (1997) & Gilboa & Pazgal (2001) models together with cognitive theory of Gigerenzer and Murray (1997) are a representation of consumer choice. According to Hall & Porteus (2000) when one firm has an advantage of more loyal customers with lower probabilities of switching upon a service failure, then it is optimal for the firm to offer a lower level of quality than its competitors.

In case of late deliveries the drivers who transport the newspapers in different regions should be equipped with the right information to communicate the reason for delays upon arrival. On learning that the Newspapers shall be delivered late, the management of separate affected media houses should inform their customers about the anticipated delays to increase customer satisfaction thus obtain more repeat business (Ward 1999).

Baker and others, in Management Accounting (USA), June 1994(75/12): p.56, demonstrate how a pseudonymous automotive supplier's pursuit of time-based and quality-based

performance goals was hindered by the organization's dependence on traditional performance measures, standard costing and direct labor variances. They suggest changes could be adopted to rectify the problem and to implement a JIT technique.

Gargeya and Thompson in Industrial Management (1994), asserts that jobbing shops, with their limited resources, will find it impracticable to implement the total Just-In-Time (JIT) technique in all of their operations. They recommend that, they can nevertheless achieve selective introduction over time, of those elements of JIT that are most appropriate to the individual organization. They maintain that education and training of employees in the JIT technique is the first prerequisite, with particular reference to cross-training, as unionization is less likely to be a problem. He sees reduction in set-up times as an area where recognized techniques for use by the small job shop are readily available and can lead to the use of a pull-through production system as group technology is implemented when budget constraints allow.

2.6 JIT Conceptual framework

2.6.1 Introduction

Implementation of JIT requires company wide commitment to continuous improvement of activities and top management support. All the departments have to work together to ensure the success of JIT and improved performance. Proper implementation of JIT results to added competitive advantage to the company. The figure below shows how the implementation of the technique should work.

2.6.2 JIT implementation framework

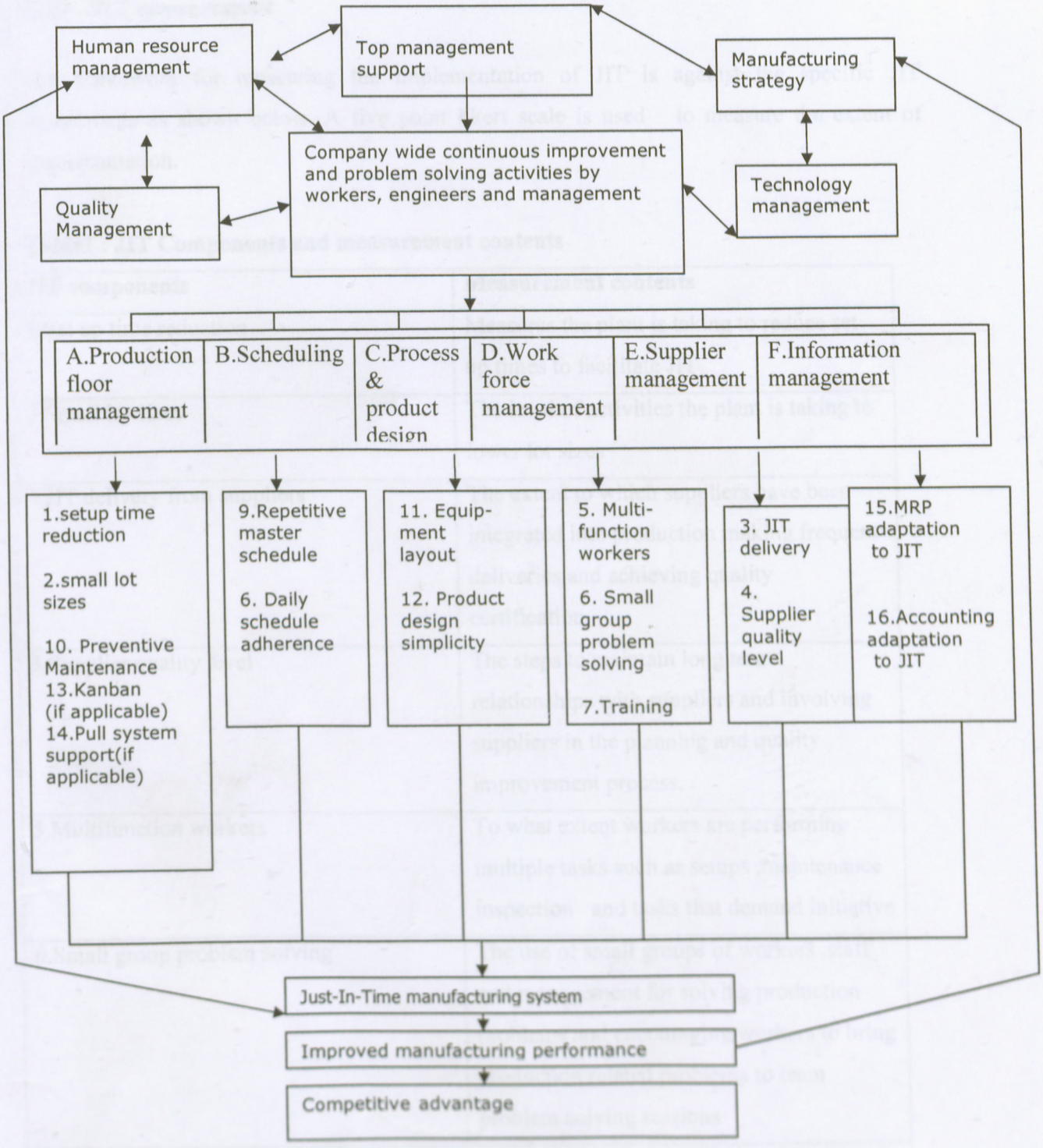


Figure1: Core Just –In- Time Manufacturing Framework: Adopted from Production and operations management journal Vol2,No3,Summer 1993.

2.6.3 JIT measurement

The framework for measuring the implementation of JIT is against the specific JIT components as shown below. A five point likert scale is used to measure the extent of implementation.

Table1 : JIT Components and measurement contents

JIT components	Measurement contents
1.Set up time reduction	Measures the plant is taking to reduce set up times to facilitate JIT
2.Small lot sizes	The level of activities the plant is taking to lower lot sizes
3.JIT delivery from suppliers	The extent to which suppliers have been integrated into production making frequent deliveries and achieving quality certification
4.Supplier quality level	The steps to maintain long term relationships with suppliers and involving suppliers in the planning and quality improvement process.
5.Multifunction workers	To what extent workers are performing multiple tasks such as setups ,maintenance inspection and tasks that demand initiative
6.Small group problem solving	The use of small groups of workers ,staff and management for solving production problems and encouraging workers to bring production related problems to team problem solving sessions
7.Training	Plant management commitment to train workers for multiple tasks and to maintain high worker skill levels relative to industry
8.Daily schedule adherence	The time allotted for meeting each days

JIT components	Measurement contents
	schedule including catching up after shortages for quality considerations or machine breakdowns
10.Repetitive master schedule	The extent of use of a repetitive daily production schedule in the plant
11.Preventive maintenance	The steps plant management has taken to introduce preventive maintenance practices to workers daily routines reserved a part for preventive maintenance and incorporated preventive maintenance into manufacturing strategy.
12.Equipment layout	The use of manufacturing cells machine and process layout and the use of equipment designed for flexible floor layout
13.Product design simplicity	The simplicity of design specifications minimizing part counts and customers orientation in new product design
14.Kanban	The integration of plant and suppliers in to production in terms of using Kanban cards and containers
15.Pull system	The features the plant has introduced supporting pull systems such as supporting for quality problems ,efficient floor layout and workers directed production
16. Material resource planning production (MRP) adaptation to Just -in time - production.	The extent the plant has integrated IT concepts with Material resource planning
17.Accounting adaptation	How well the plants accounting practices support a JIT orientation

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

The study was modeled on a survey research design. The design allowed the researcher to collect large amount of data from each of the organizations selected. The design was used as it is appropriate for seeking information that describes the existing phenomena by asking individual respondents application of Just-In-Time technique in the supply chain management operations in the newspaper industry. Survey design is appropriate to describe a population that is too large for direct observation.

3.2 The population

The study was carried out on the four daily English newspapers: The Nation, The Standard, The Kenya Times and The People. Daily Metro, Business Daily and Nairobi Star are excluded since the first two are published only from Monday to Friday and Nairobi Star covers only Nairobi.

The respondents included any staff within the following departments: production, advertising, editorial, and distribution of the daily newspapers firms. These respondents were chosen because their departments are crucial in the newspaper supply chain and hence expected to easily relate to the issues under study.

3.3 The Sample

The four departments, namely: production, advertising, editorial, and distribution were targeted as they constitute what one would see as the supply chain. Three respondents were selected from each of the departments in each company, making a total of twelve respondents per company. Three respondents from each department suffice for the purposes of this study because the information regarding the department is expected to be consistent even if there

were greater number of respondents from that department. The respondents were therefore selected conveniently depending on availability. The total sample for the study was 48.

3.4 Data Collection

Primary data was used for this research. A structured questionnaire was self administered by the researcher. The questionnaire is divided into two sections, A and B. The questions in section A seek to collect the bio-data of the company. Section B was used to collect information on awareness of JIT technique and the application in the supply chain management.

A Likert scale was used to measure application of the 17 core dimensions of JIT. The response to each of the items is measured on a five point Likert scale, that is: (1)strongly disagree, (2)disagree, (3)neither agree nor disagree, (4)agree, and (5)strongly agree. The Likert scale measured the degree to which the respondents agree with the various statements on the application of JIT in their respective companies.

3.5 Data analysis

Data was summarized using descriptive statistics including frequencies, mean scores, and percentages. Frequencies were used to show the degree of awareness and practice of JIT technique in the industry. Mean scores were calculated for each of the JIT dimensions in each company. Mean was used to indicate the benefits realized from applying JIT technique.

Chi square test was used to establish whether a significant relationship exists between the level of awareness of the JIT concept and its application by the media industry. The test variables were the level of awareness and the level of application of JIT technique in the print media industry. Based on a threshold alpha of 0.05 critical value, we reject or accept the null hypothesis that there is significant relationship between the level of awareness of the JIT concept and its application by the media industry.

Findings were presented in tables, graphs and narratives. The level of awareness and application of JIT technique were presented graphically. The extent to which JIT is practiced was presented in a table and explained in narratives.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Response Rate

The survey was done on four different newspaper firms to ascertain the level of JIT technique application. The firms were: Nation media group, Standard newspaper, People and Kenya Times. Thirty three out of 48 responded to the questions. This was a response rate of 68.8%. The response levels are indicated in Table 4.1.

Table 4.1: Response levels by company

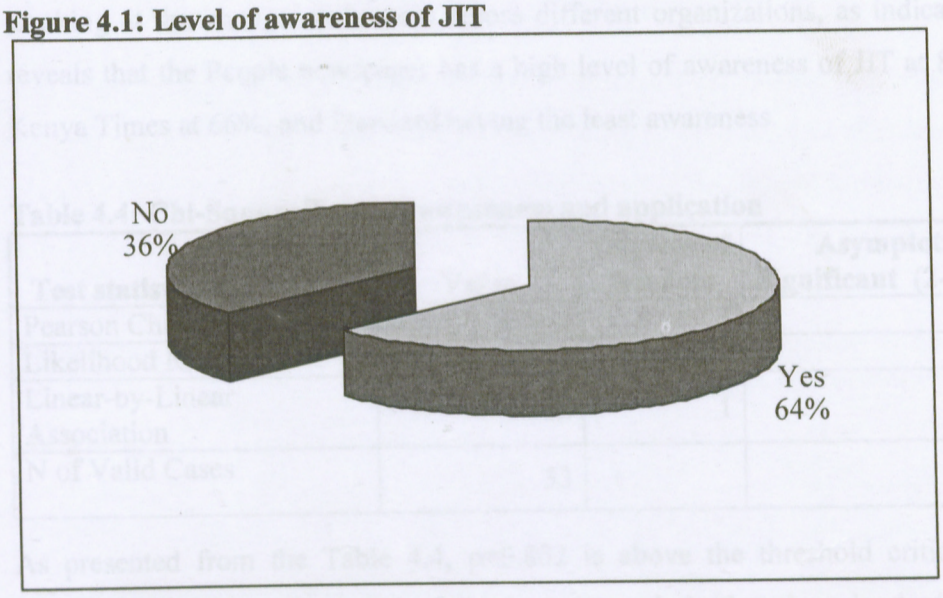
Name of company	No. Sampled	No. that Responded	Percentage Response
Nation media group	12	11	91.7
Standard Group	12	11	91.7
Kenya times	12	6	50.0
People	12	5	41.7
Total	48	33	68.8

The response rate was high (at 91.7% each) in Nation Media and Standard group due to the availability of the respondents as compared to Kenya Times and the People at 50.0% and 41.7% respectively.

4.2 Level of awareness of JIT technique

Respondents were asked whether they have heard or read about JIT technique. As presented in Figure 4.1, 64 % reported to have heard or read about JIT while 36% reported otherwise.

Figure 4.1: Level of awareness of JIT



Out of 64% who reported to have heard or read about JIT technique, 24% heard of it through seminars, 18% from the internet, 12% from colleagues and friends and 9% from college.

Table 4.2: Distribution of level of awareness

Level of awareness	Frequency	Percentage
Little awareness	6	28.6
Low	11	52.4
High	4	19.0
Total	21	100

Of those who are aware of the JIT technique only 19% have a high level of awareness, as shown in Table 4.2. This indicates that even though 64% are aware they do not have enough knowledge of the technique. 52% have low awareness of the technique while 28% have very little awareness even though they have heard of it.

Table 4.3: Distribution of level of staff awareness by company

Name of company		Awareness of JIT		Total
		Yes	No	
Nation Media Group	Count	7	4	11
	%	63.6%	36.4%	100.0%
Standard Group	Count	6	5	11
	%	54.5%	45.5%	100.0%
Kenya Times	Count	4	2	6
	%	66.7%	33.3%	100.0%
People	Count	4	1	5
	%	80.0%	20.0%	100.0%
Total	Count	21	12	33
	%	63.6%	36.4%	100.0%

Looking at the level of awareness across different organizations, as indicated in Table 4.3, reveals that the People newspaper has a high level of awareness of JIT at 80%, followed by Kenya Times at 66%, and Standard having the least awareness.

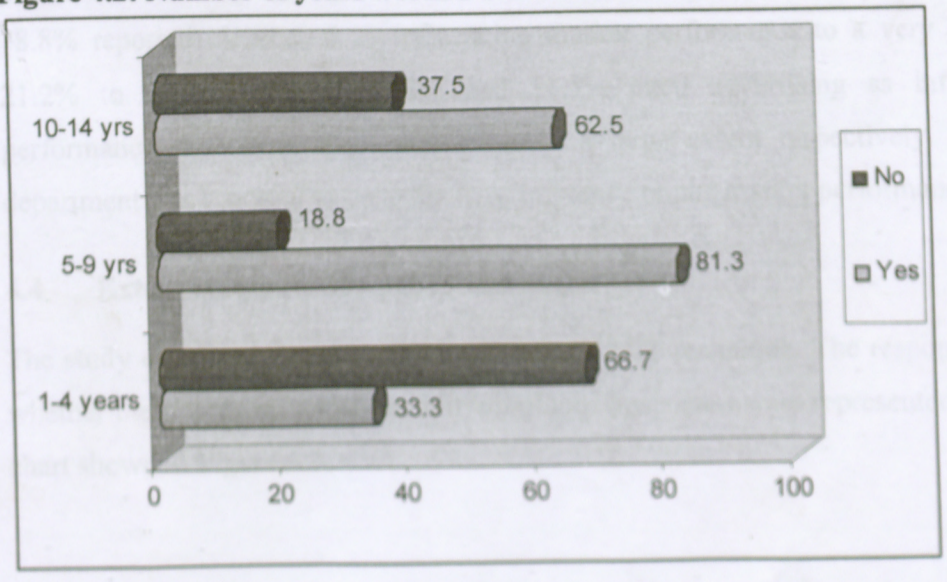
Table 4.4: Chi-Square Tests on awareness and application

Test statistic	Value	Degrees of freedom	Asymptotic Significant (2-sided)
Pearson Chi-Square	.995(a)	3	0.802
Likelihood Ratio	1.041	3	0.791
Linear-by-Linear Association	.382	1	0.536
N of Valid Cases	33		

As presented from the Table 4.4, p=0.802 is above the threshold critical value of 0.05. Therefore, we reject the null hypothesis and conclude that there is significant relationship between the level of awareness of the JIT concept and its application by the media industry.

The survey further sought to find out the level of awareness by number of years worked. As indicated in Figure 4.2, those who have worked between 5 to 9 years have a higher level of awareness at 81.3% as compared to those who have worked for more than 10 years at 62.5%. The least level of awareness is among those who have worked for less than 4 years at 33% which indicates that those who have less experience are not aware of the technique.

Figure 4.2: Number of years worked and awareness of JIT



4.3 Departments Influence on Market Performance

The study sought to establish department's influence on market performance based on an interval scale of measurement of 1 to 5 (1 being to no extent at all and 5 to a very large extent). The aim was to find out which departments were skewed towards the positive. Table 4.5 represents the extent to which newspapers influence market performance by the departments.

Table 4.5: Extent of influence on newspaper market performance by departments

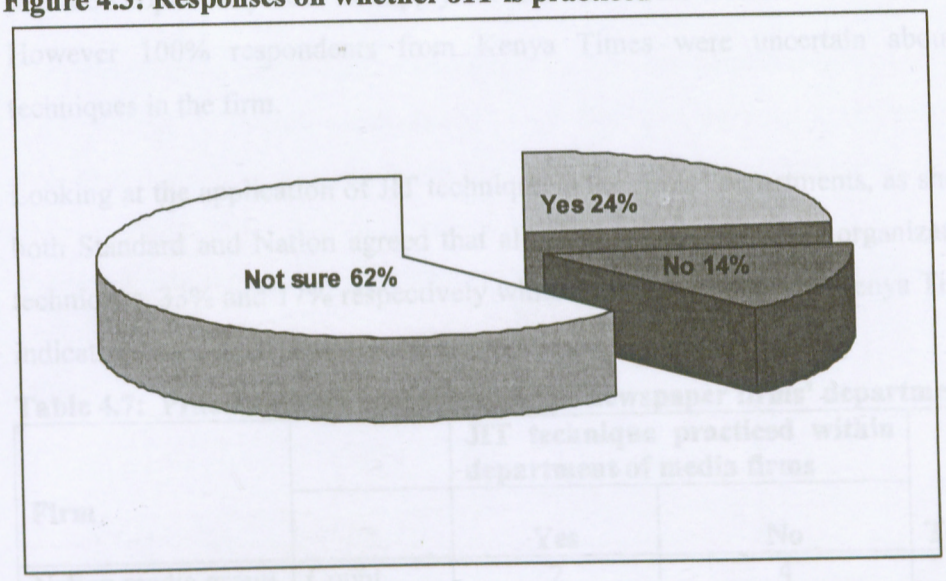
Department	Influence on market performance					
	No extent at all	Small extent	Moderate extent	Large extent	Very large extent	Total
Finance	12.1%		24.2%	42.4%	21.2%	100%
Human resource	49.1%	35.7%	9.1%	6.1%	-	100%
Circulation	-	-	-	21.2%	78.8%	100%
Marketing	-	-	6.1%	51.5%	42.4%	100%
Editorial	-	-	12.1%	21.2%	66.7%	100%
Production	-	-	12.1%	-	87.9%	100%
Transportation	-	-	12.1%	9.1%	78.8%	100%
Purchasing	-	-	42.4%	45.5%	12.1%	100%
Information Technology	-	-	18.2%	57.6%	24.2%	100%
Advertising	-	-	-	51.5%	48.5%	100%

The table indicates that the departments play a role in influencing newspaper market performance. Circulation and advertising departments influence the market most. While 78.8% reported circulation as influencing market performance to a very large extent and 21.2% to a large extent, 48.5% and 51.5% cited advertising as influencing market performance to a very large extent and to a large extent respectively. Human resource department was reported to have the least influence on the market performance.

4.4 Extent of application of JIT technique

The study examined the extent of application of JIT technique. The respondents were asked whether their company practices JIT technique. Responses were represented in form of a pie-chart shown in Figure 4.3.

Figure 4.3: Responses on whether JIT is practiced



On application of the Just-In-Time technique among the organizations surveyed, 62% of the respondents said they are not sure if the firm practices JIT technique, 24% said it was being practiced while 14% said they do not practice the technique at all.

Looking at the distribution among the companies on application of JIT, shown in Table 4.6, there was a variation within firms with some saying they do apply JIT while at the same time some respondents within the firm indicate they do not use the technique or are not sure if the technique is applied.

Table 4.6: Practice of JIT technique classified by newspaper firm

Firm		JIT technique practiced within the media firms			Total
		Yes	No	Not sure	
Nation media group	Count	2	1	4	7
	%	28.60%	14.30%	57.10%	100.00%
Standard Group	Count	1		5	6
	%	16.70%		83.30%	100.00%
Kenya times	Count			4	4
	%			100.00%	100.00%
People	Count		2	2	4
	%		50.00%	50.00%	100.00%
Total	Count	3	3	15	21
	%	14.29%	14.29%	71.43%	100.00%

Further there seems to be a low acceptance of the application of JIT technique among the firms, with Nation media at 29% and Standard at 17% while 50% of the respondents reported

that the People daily does not apply JIT and 50% were uncertain from the same media firm. However 100% respondents from Kenya Times were uncertain about practicing JIT techniques in the firm.

Looking at the application of JIT technique in the firms' departments, as shown in Table 4.7, both Standard and Nation agreed that all departments with their organization do apply JIT techniques, 33% and 17% respectively while the people daily and Kenya Times had 100% an indication that not all departments interviewed apply JIT.

Table 4.7: Practice of JIT technique across newspaper firms' departments

Firm		JIT technique practiced within department of media firms		Total
		Yes	No	
Nation media group	Count	2	4	6
	%	33.3%	66.7%	100.0%
Standard Group	Count	1	5	6
	%	16.7%	83.3%	100.0%
Kenya times	Count		4	4
	%		100.0%	100.0%
People	Count		2	2
	%		100.0%	100.0%
Total	Count	3	15	18
	%	16.7%	83.3%	100.0%

4.5 Impact of JIT on firm's departmental performance

The respondents, who said they apply JIT techniques within all departments in their firms, were asked the impact JIT has had on their firm's performance since they started applying it. As shown in Table 4.8, 67% said it had a positive impact to their departments while 33% said it had no impact at all.

Table 4.8: Impact of JIT on newspaper industry performance

Firm		Impact of JIT on departmental performance		
		Has positively impacted	No impact at all	Total
Nation media group	Count	1	1	2
	%	50.0%	50.0%	100.0%
Standard Group	Count	1		1
	%	100.0%		100.0%
Total	Count	2	1	3
	%	66.7%	33.3%	100.0%

The researcher further sought to find out if there is any emphasis placed on the importance of JIT technique on overall performance by the firm's management. The respondents indicated that there is no emphasis placed on the importance of JIT technique on overall performance by the management as shown in the Table 4.9.

Table 4.9: Management emphasis on importance of JIT on performance

Firm		Emphasis of importance of JIT on overall performance		Total
		Yes	No	
Nation media group	Count	2	5	7
	%	28.6%	71.4%	100.0%
Standard Group	Count	2	4	6
	%	33.3%	66.7%	100.0%
Kenya times	Count		4	4
	%		100.0%	100.0%
People	Count	2	2	4
	%	50.0%	50.0%	100.0%
Total	Count	6	15	21
	%	28.6%	71.4%	100.0%

From Table 4.10, 28.6% of the respondents were not sure when the technique was implemented in their departments, 14% indicated it was introduced in the mid nineties and 47.6% said it was not introduced though they are aware of it. Only 9.5% said it was introduced in the year 2004.

Table 4.10: Likely Time of introduction of JIT in the newspaper industry

Firm		Introduction of JIT technique				Total
		Not sure	Not yet introduced	1990s	2004	
Nation media group	Count	2	3	1	1	7
	%	28.6%	42.9%	14.3%	14.3%	100.0%
Standard Group	Count	2	3		1	6
	%	33.3%	50.0%		16.7%	100.0%
Kenya times	Count	2	2			4
	%	50.0%	50.0%			100.0%
People	Count		2	2		4
	%		50.0%	50.0%		100.0%
Total	Count	6	10	3	2	21
	%	28.6%	47.6%	14.3%	9.5%	100.0%

4.6 Information on external suppliers

Suppliers do play an integral role in the supply chain of newspaper market , thus a few statements were asked to gauge the level of importance each supplier plays based on the statements.

Table 4.11: External suppliers' standards on the JIT requirements

Suppliers' standards	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
We receive daily shipments from our supplier on timely basis	-	30.3%	51.5%	18.2%	-
Our suppliers are certified	-	63.6%	36.4%		-
We strive to establish long-term relationship with our suppliers	15.2%	48.5%	36.4%	-	-
Quality is our number one criterion in selecting suppliers	15.2%	48.5%	18.2%	18.2%	-

Most respondents agreed to the statements with few exceptions where the respondents disagreed with statements as shown in Table 4.11. About 30% of external suppliers deliver daily shipments on time, 64% are certified, 49% have long-term business relationships and quality as their number one criterion respectively.

4.7 Information on Human Resource

The role of human resource is manifested by, among others, the team spirit in the newspaper industry. The respondents were asked whether they prefer to work as individuals, in teams or both.

Figure 4.4: Indication of team spirit in newspaper industry

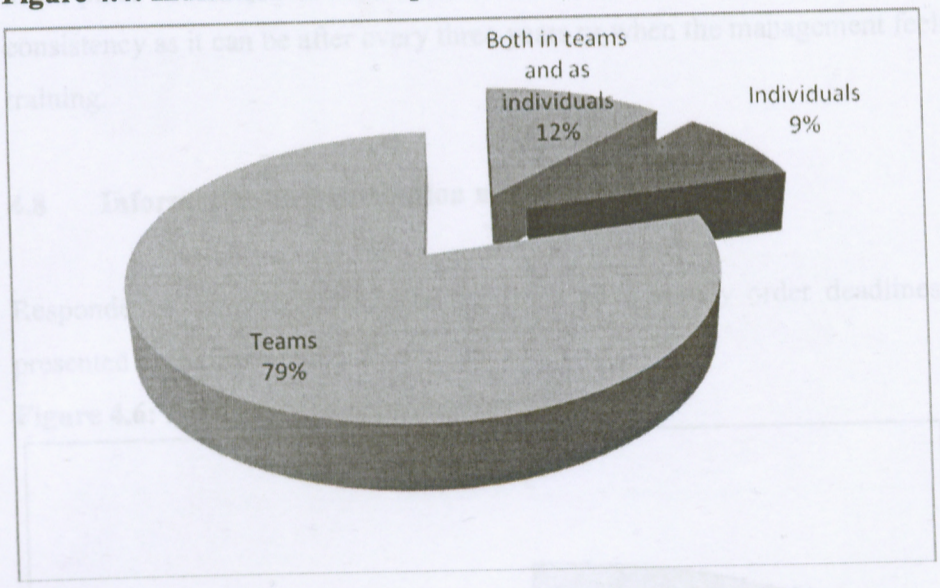


Figure 4.4 shows that 79% of the respondents indicated that they work in teams, 9% indicated they work as individuals while 12% indicated they work both as individuals and in teams, an indication of a high team spirit in the newspaper industry.

Emphasis on training is indicated by the percentages of the respondents who agree to the existence of a training program and the frequency.

Figure 4.5: Availability of training for employees

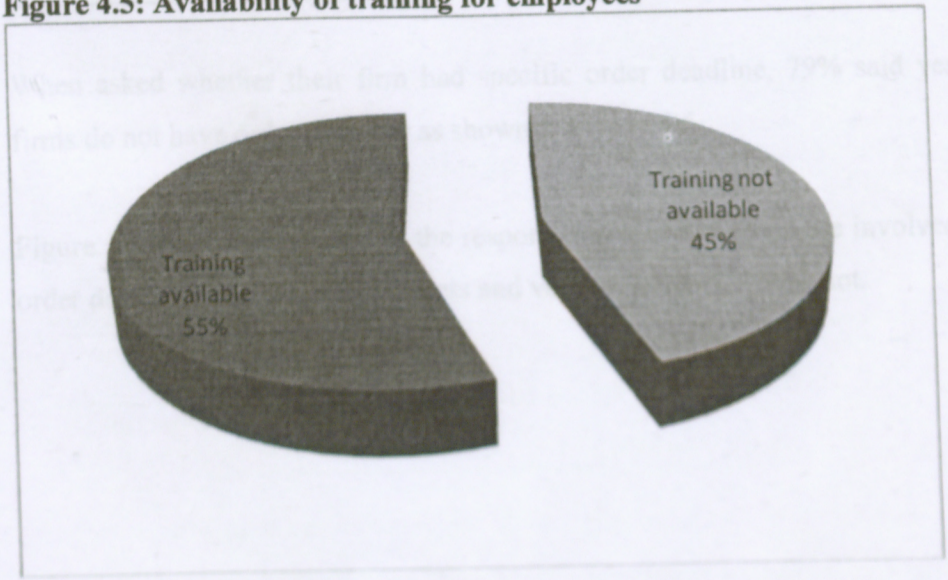


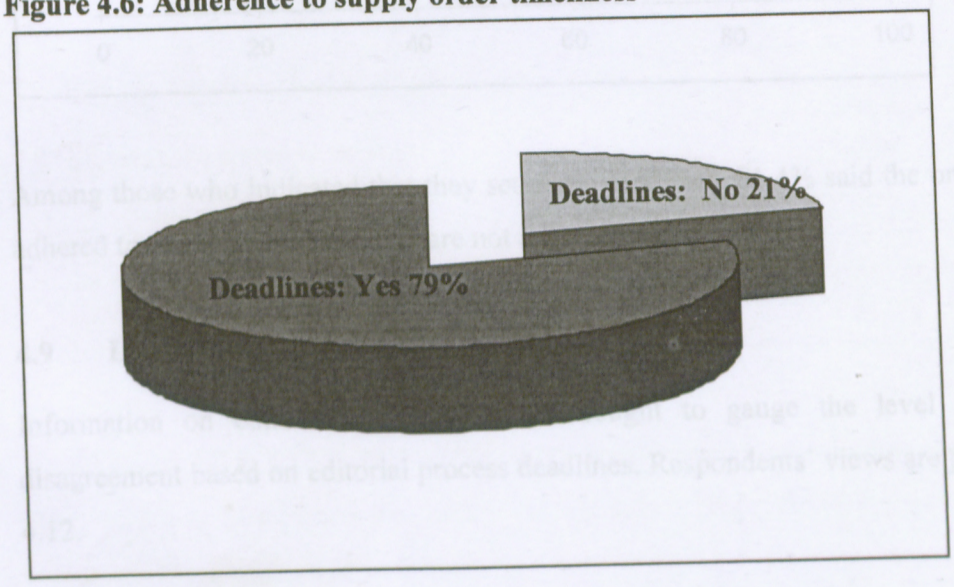
Figure 4.5 shows that 55% cited there was ongoing training in their organizations while 45% said there was no training undertaken in the firms. Those who cited there was training in their

firms were asked to give the frequency of the training. Fifty percent (50%) said the training takes place annually, 33.3% said it takes place bi-annually while 16.7% said there is no consistency as it can be after every three years or when the management feels there is need for training.

4.8 Information on Distribution network

Respondents were asked whether the firms have supply order deadlines. Responses were presented in Figure 4.6.

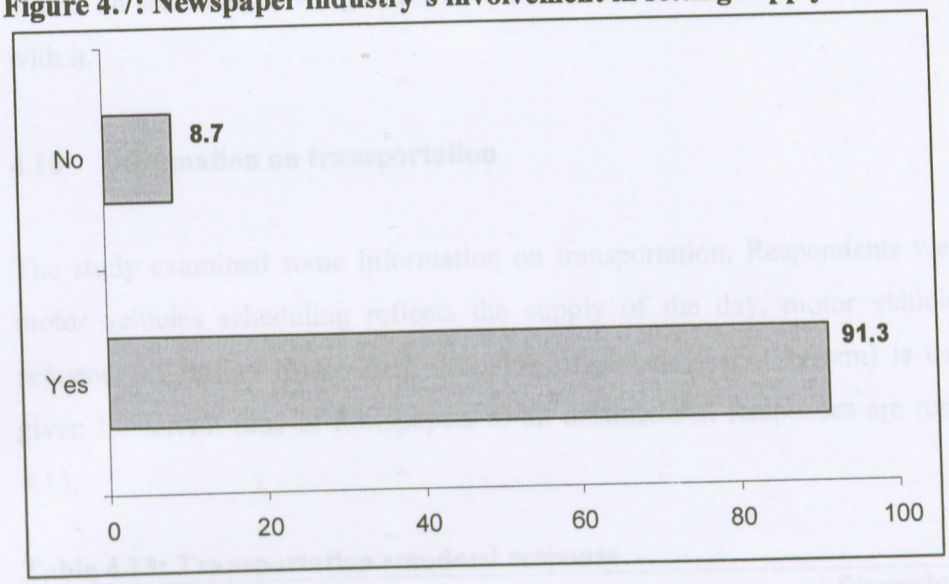
Figure 4.6: Adherence to supply order timeliness



When asked whether their firm had specific order deadline, 79% said yes while 21% said firms do not have order deadline as shown in Figure 4.6.

Figure 4.7 shows that 91.3% of the respondents said that firms are involved in setting supply order deadline for distributors/agents and vendors while 8.7% do not.

Figure 4.7: Newspaper industry's involvement in setting supply order deadlines



Among those who indicated that they set order deadlines, 71.4% said the order deadlines are adhered to while 28.6% said they are not adhered to.

4.9 Information on editorial

Information on editorial department was sought to gauge the level of agreement or disagreement based on editorial process deadlines. Respondents' views are presented in Table 4.12.

Table 4.12: Percentage response on editorial information

Editorial process deadlines	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Bureau/Branches stories meet daily deadlines	-	84.8%	15.2%	-	-
Correspondents submit their work on time	-	42.4%	45.5%	12.1%	-
Individual pages are completed with details on schedule	-	57.6%	42.4%	-	-
Editorial always accomplishes its tasks on time	-	69.7%	30.3%	-	-

Bureau or branches stories' meeting their daily deadlines was rated at 84.8% meaning that respondents agree with the statement while 15% neither agreed nor disagreed.

On correspondents submitting their work on time, 42% agreed, 45% neither agreed nor disagreed while 12% disagreed with the statement. On individual pages being completed with

details on schedule, 57% agreed with the statement while 42% neither agreed nor disagreed with it.

4.10 Information on transportation

The study examined some information on transportation. Respondents were asked whether motor vehicles scheduling reflects the supply of the day, motor vehicle departure is in sequence of further routes first, dropping of parcels (LIFO system) is used or deadline is given for arrival time of newspapers to all destinations. Responses are represented in Table 4.13.

Table 4.13: Transportation standard response

Transportation specifications	Strongly agree	Agree	Disagree
Motor vehicles scheduling reflects the supply of the day	12.1%	63.7%	24.2%
Motor vehicle departure is in sequence of further routes first	12.1%	87.9%	-
Dropping of parcels (i.e. LIFO system) is used	-	100%	-
Deadline is given for arrival time of newspapers to all destinations	9.1%	66.7%	24.2%

As shown in Table 4.13, 100% of the respondents agreed that dropping (the LIFO system) is used, 12.1% each reported that motor vehicle scheduling reflects the supply of the day and motor vehicle departure is in sequence of further routes first. However, while 87.9% agreed that motor vehicle departure is in sequence of further routes first, 63.7% and 66.7% agreed that motor vehicles scheduling reflects the supply of the day and deadline is given for arrival time of newspapers to all destinations respectively, 24.2% each disagreed on the same.

4.11 Benefits of JIT application

The study identified several benefits of JIT application which were ranked on the basis of importance and relevance to the newspaper industry as indicated in Table 4.14.

Table 4.14: Benefits of JIT applications ranked in order of importance

Benefits of JIT applications	Mean	Std. Deviation	Rank
Reduction of production machine time setup	3.9	0.625	1
The customer determines the level of stock holding	3.57	1.076	2
Integration of different functions into the teams	3.52	0.75	3
Decentralization of responsibilities onto the multifunctional teams	3.48	0.512	4
Teams that are able to perform different tasks	3.43	0.507	5
Elimination of waste	3.33	1.065	6
Provision of timely information to employees	3.05	0.805	7
Zero defects	2.86	0.655	8

Table 4.14 sought to find the extent to which JIT concept leads to realizing certain benefits in the newspaper firms. Though the concept is not in use within the organizations, some elements of the technique are being utilized resulting to certain benefits which the respondents do not relate to the JIT concept.

A mean score of above 2.5 indicates the benefits are realized from applying certain portions of the concept. Elimination of zero defects comes last in the index indicating the need to conceptualize the JIT technique to further realize its gains.

4.12 Implementation of JIT technique

The study examined the key factors that laid the foundation for the implementation of JIT technique as indicated in Table 4.15.

Table 4.15: Statements on implementation of JIT technique

JIT Statements	Mean	Std. Deviation	Rank
No time in schedule to allow for machine breakdown	3.43	0.746	1
Master schedule repeats the same mix of products from hour to hour	3.05	0.805	2
Frequently produce more than the schedule amount a day	2.9	0.889	3
Use back-flushing system where components are subtracted from inventory	2.81	0.68	4
We use process accounting in assigning all costs	2.71	0.956	5
Schedule allowed time to catch up due to stoppages or quality problems	2.67	0.966	6
Different advertising facets do meet respective deadlines	2.67	1.065	7
We have separate shifts reserved for maintenance activities	2.62	1.203	8
Have organized our plant in-terms of manufacturing cells	2.52	0.873	9
There is a strong customer focus in our design process	2.33	1.197	10
Emphasize good maintenance as a strong strategy for achieving quality	2.14	1.315	11

Table 4.15 sought to find the extent to which respondents agree with the statements on the application of JIT concept in their company. The results indicate that the respondents ranked no time in schedule is allowed for machine breakdown as first while emphasis placed on good maintenance as a strong strategy for achieving quality was ranked the last, with means of 3.43 and 2.14 respectively.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Summary, discussion and conclusions

The objectives of the study were to find out the level of awareness and extent of application of Just-In-Time technique in the Supply Chain Management of the daily newspaper industry operations in Kenya. Four newspaper firms: Nation, Standard, Kenya Times and The people were surveyed and results from a total of 33 respondents analysed.

According to the study findings, the level of awareness of the concept of JIT by the respondents is low, at about 50%, thus need for more sensitization of the media houses on the importance of the JIT technique. Most respondents have heard or read about the concept from the internet, seminars or colleagues but not in enough detail to equip them with the required level of knowledge. From the findings, it is clear that the media firms, to some little extent, apply some facets of the JIT concept within different departments to meet the set deadlines of specific tasks.

The key challenges faced by the print media industry in the country in the application of JIT technique include;

- Lack of flexibile employees
- Lack of adequate employee capacity
- Power blackouts
- Motor vehicle breakdown
- Machine or equipment breakdown
- Late arrival of pages
- Poor infrastructure, for example roads

The challenges indicated above hinder the application of Just-In-Time technique within the industry. In order for the industry to keep abreast with the philosophy there is need not only to invest but to also enhance the use of the technique in order to meet market targets and eliminate any setbacks within the system. Communication is another facet which needs to be

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stressed upon for the concept to be in place as all departments need to be in touch and inform each other of progress or any setback that will or might arise. For the daily newspaper firms to remain competitive in this era, it is imperative that they improve on the efficiency of their supply chain operations and embrace JIT technique. The implementation of the technique will lead to profitability, improved market arrivals and customer satisfaction (Hess et al 2003).

5.2 Limitations of the study

The limitations encountered while conducting this study included; non-responsiveness from staff and some delays in handing back of the questionnaires. The reason for the delay was that some of the staff members were very busy to avail themselves to participate in the study. Out of the required 48 questionnaires distributed for collection of data only 33 were completed and returned.

Due to minimal implementation of the JIT technique by the newspaper firms there was not enough information gathered to benchmark on the implementation of the technique in kenyan newspaper industry operations.

5.3 Suggestions for future research

There is need for further research in other related industries such as electronic media to compare the findings. Further study may also be conducted in unrelated industries for the same purpose.

5.4 Recommendations for policy and practice

From the findings it is clear that all the departments in the newspaper industry practice JIT technique only to a little extent. Therefore there is need for newspaper industry to invest a lot more in JIT technique in order to keep abreast with the competition from the electronic media as well as other industries. It is also important that the newspaper industry focus on the following areas: communications across teams, right infrastructure, employing logistics skills at all levels and employment of qualified staff.

Just-In-Time technique should be part of overall strategy in the media industry to enable growth, cost reduction and competitive advantage. It should be embraced by top management and applied along supply chain process as a continuous strategy. However, to achieve the efficiency level, firms need to have continuous improvement as an ongoing process, focus on training and motivation of employees and introduce JIT technique elements.

Newspaper industry firms can avoid waste by adopting standard process, intergrate functions across the organization and adopt the Just-In-Time technique.

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Appendix I: LETTER OF INTRODUCTION

University of Nairobi
Department of Management Science
School of Business,
P.O.BOX 30197
NAIROBI
October 2008

Dear Respondent,

RE: APPLICATION OF JUST-IN-TIME TECHNIQUE IN NEWSPAPER INDUSTRY

I am an MBA student at the University of Nairobi, School of Business, Department of Management Science, conducting a research on "Application of Just-In-Time technique in the supply chain management in the newspaper industry in Kenya" in partial fulfillment of the requirements for the award of the degree of Master of Business Administration.

For the purpose of completing my research, I require to collect information through the attached questionnaire. You have been selected to be part of the respondents for the study. Please find time and complete the questionnaire to the best of your knowledge.

Kindly note that the information requested is purely for academic purposes and that it shall be treated with utmost confidentiality.

Thank you for your co-operation.
Yours Sincerely,

Florence Wasike
MBA-Student

Appendix II: QUESTIONNARE

This questionnaire aims to gather information on the extent to which Just-In-Time (JIT) technique is applied in the Newspaper Industry.

Kindly answer all the questions. Any information given shall be treated confidentially and used for academic purposes only.

SECTION A

1. Name of company.....

2. How long have you worked for the company? (Please tick)

   1-4 years ( )
   5- 9 years ( )
   10-14 years ( )
   15- Above ( )

3. When was your company formed? .....

4. Please indicate your department .....

5. Please indicate your designation.....

6. How long have you been in the department? (Please Tick)

   1-4 years ( )
   5- 9 years ( )
   10-14 years ( )
   15- Above ( )

7. How many people are employed in your department? (Please Tick)

   Less than 10 ( )
   11-20 ( )
   21-30 ( )
   31-40 ( )
   41-50 ( )
   +50 ( )

8. How many are permanent? (Please Tick)

   Less than 10 ( )
   11-20 ( )
   21-30 ( )
   31-40 ( )
   41-50 ( )
   +50 ( )

9. How many are on Casual/Temporary/Contract terms? (Please Tick)

Less than 10 ( )
11-20 ( )
21-30 ( )
31-40 ( )
41-50 ( )
+50 ( )

SECTION B

10. Please tick to indicate the extent to which the following departments influence newspaper market performance

	Department	**No extent At all**	**Small extent**	**Moderate extent**	**Large extent**	**Very large Extent**
1	Finance					
2	Human resources					
3	Circulation					
4	Marketing					
5	Editorial					
6	Production					
7	Transportation					
8	Purchasing					
9	Information Technology					
10	Advertising					
11	Others specify					

11. Have you read or heard of the JIT technique?

Yes ( ) No ( )

12. How did you get to learn about the JIT technique? .....

.....

13. Rate your level of awareness of the Just –In-Time technique?

Not aware ( ) Low ( ) High ( )

14. Does your company practice Just-In-Time technique?

Yes ( ) No ( )

15. Is JIT practiced within all departments in your organization?

Yes ( ) No ( )

16. How has JIT impacted on your department's performance?

Has positively impacted ( ) Has negatively impacted ( )

No impact at all ( )

17. Does your organization emphasis the importance of JIT on overall performance?

Yes ( ) No ( )

18. Please tick against each question only once to indicate the extent to which application of Just-In-Time technique leads to the following benefits.

JIT Statement	**No Extent at all**	**Small extent**	**Moderate extent**	**Large extent**	**Very Large extent**
Reduction in production machine time setup.					
Teams that are able to perform different tasks (Multifunctional teams)					
The customer determines the level of stock holding					
Decentralization of responsibilities onto the multifunctional teams					
Provision of timely information to employees					
Integration of different functions into the teams					
Elimination of waste.					
Zero defects					

19. In your department is the following statement true or not true. Please tick

Statement	True	Not True
Work schedule is designed to allow time for machine /Computer breakdowns ?		
Work schedule is a continuous process among internal /external departments ?		
We frequently produce more than the scheduled amount at a time?		
There is no time in the schedule for machine breakdown or production stoppages?		
Direct labor is authorized to stop production for quality problems?		
Job assignment is such that there's no idle staff at any one point in time?		
Employees inspect their own output?		
An individual employee performs different tasks?		

20. Please indicate the extent to which you agree with the following statements on the application of JIT technique in your company. Scale: 1=strongly disagree, 2=Disagree, 3=Neither agree nor disagree, 4=Agree, 5=Strongly agree.

JIT Statement	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Our schedule is designed to allow time for catching up due to production stoppages or quality problems.					
We frequently produce more than the scheduled amount in a day.					
There is no time in the schedule for machine breakdown or production stoppages.					
Our master schedule repeats the same mix of products from hour to hour and day to day.					
We emphasize good maintenance as a strategy for achieving quality					

and schedule maintenance.					
We have a separate shift or part of a shift reserved each day for maintenance activities.					
We have organized our plant in terms of manufacturing cells.					
There is a strong customer focus in our design process.					
We use a back-flushing system where components are subtracted from inventory every time a product is made.					
We use process accounting in assigning all costs					
Different advertising facets (sections) do meet their respective deadlines.					

21.The following statements relate to information on external suppliers.

JIT Statements	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**
We receive daily shipments from our suppliers on timely basis.					
Our suppliers are certified or qualified for quality.					
We strive to establish long-term relationships with suppliers.					
Quality is our number one criterion in selecting suppliers.					

Information on human resources

22. In your organization do employees work in teams or as individuals?

Teams ( ) Individuals ( )

23. Is there a training program in place for employees? Please tick

Yes ( ) No ( )

24. If yes how frequent?

Annually ( )

Bi-annual ( )

Others Specify.....

Information on Distribution network

25. Do you have a specific supply order deadline?

Yes ( ) No ( )

26. Is your company involved in setting supply order deadline from distributors/agents/vendors?

Yes ( ) No ( )

27. Are the deadline target times strictly adhered to?

Yes ( ) No ( )

28. If answer above is Yes, what's the frequency of meeting deadlines?

1 Always ( )

2 Sometimes ( )

3 Never ( )

29. On a five point scale where 1 is strongly agree and 5 is strongly disagree how would you rate the following JIT statements

JIT statements	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**
Motor vehicle scheduling reflects the supply of the day. The higher the order the more the number of vehicles and vice versa					
Motor vehicles departure is in a sequence					

of further routes first					
The dropping off of parcels from vehicles is such that the LIFO system is used					
Deadlines are given for arrival times of newspapers to all destinations					

30. **Editorial information**

JIT Statements	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**
Our Bureau/branches stories meet their daily deadlines.					
The correspondents submit their work on time.					
Individual pages are completed with details of both news coverage and adverts if any on schedule.					
Editorial always accomplishes its tasks on time.					

31. When was the Just- In- Time technique introduced in the company?

Please specify.....

32. What can you say is the general trend of market arrival of the firm's publication after the introduction of Just-In-Time technique (Please tick one)

1 Excellent ( )

2 Good ( )

3 Fair ( )

4 Poor ( )

33. Did you experience any practical problems in applying Just -In –Time technique in your internal supply chain?

Yes ( ) No ( ) Please specify.....

34. The state of computers in your department

1 Excellent ( )

2 Good ( )

3 Fair ( )

4 Poor ( )

35. The software and computer systems in place?

1 Excellent ( )

2 Good ( )

3 Fair ( )

4 Poor ( )

36. What challenges do you face in ensuring early market arrivals?

.....

.....

.....

37. In what other ways can JIT be improved to better enhance the performance of newspaper Market arrivals.....

.....

.....

THANK YOU

Appendix III: List of Firms in the Print Media Industry.

COMPANY	ADDRESS
NATION MEDIA GROUP	PO BOX 49010 NAIROBI
THE STANDARD GROUP	PO BOX 30080 NAIROBI
KENYA TIMES LTD	P.O BOX 43800 NAIROBI.
ROYAL MEDIA SERVICES	PO BOX 64900 NAIROBI