

Inventory Management System and Business Performance: Case of Zimbabwean Mining Sector.

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Abstract: *The Zimbabwean mining companies have stores departments that distribute spares to other departments like engineering. Some mines have existing intranet systems but these are not fully utilised. The employees resort to the manual systems. Problems such as slow order processing and lack of computer skills resulted in delayed production. Data analysis, however, showed that the workers were aware of the benefits accrued from the use of intranet. Such benefits as improved stock levels, better business performance and system security were mentioned. The respondents also suggested that an extranet could be implemented to connect stakeholders to the companies in order to improve communication.*

Keywords: *inventory management system, business performance, information technology, mining sector.*

I. Background of the Study

In Zimbabwe most mining organisations have the following departments engineering, human resources, planning, stores, rock tools and hose fitters. Some head offices have central stores that provide spare parts to other departments.

Sourcing of spares from the stores by the various departments is done manually through requisitions. Stock levels are also checked manually through counting at stock taking when audits are done. The transfer of spares faces a number of challenges like gate passes, signatures and time wastage.

The engineering departments' order their spares using requisitions and they at times look for spares physically in the store shelves because of the frequent change in part numbers and intranet problems. Intranet is used when checking stock levels at some mines site stores so that transfer of such spares can be facilitated timeously. The engineering departments are not directly linked to the stores.

There are neither electronic spares update ordering nor is there a prompt stock level checks for rapid attendance to machine breakdowns.

II. Statement of the Problem

There has not been direct link between engineering department and stores. This has resulted in the engineering department manually requesting spares and component parts from the stores section. Stock levels are also checked manually and this is done for all rotations within the stores despite existence of intranet.

III. Literature Review

Many researchers have researched on inventory management systems. Chris (2014) noted that there are several problems faced by organizations that use the manual method of stock balance checks and spare requisition. The researchers noted that the system is highly labour intensive and requires constant monitoring to ensure accountability and appropriate stock levels. The system has difficulties of sharing inventory information. It therefore becomes time consuming to monitor inventory levels. The system is error prone. Data duplication is high. Retrieval of data about customer and spares is slow.

Mongare and Nasidai (2004) stated that technological innovations brought about high cost of control through centralized procurement processes and the process becomes more complex with fewer employees who need expert knowledge of computerized systems. This has resulted in the automatic elimination of those players who lack electronic capabilities and job losses as processes are being automated. Obogne and Lidasan (2005) highlighted that most companies lack the financial resources to finance the high capital requirements. In developing economies some companies are not informed of the advantages and cost effectiveness of the technology and why it costs a lot for them to acquire it. Deraman et al (2012) stated that failures to effective ICT implementation was due to lack of technical resources and human infrastructure development.

Choudhury et al. (2008) said that an increase in the inventory holding costs will result in an increase on total costs. However, due to the availability of information and communication technology companies are now able to utilize cost saving measures through improved systems.

Computerised inventory systems have some benefits. Cachon and Fisher (2000) mentioned that information technology contributes effectively to lead time and batch size reduction. Costs are reduced through information sharing across the supply chain, inventory flows are fastened and ordering processing is improved. They also reported that lower levels of aggregation, information sharing by coordinating internally within a firm and externally with suppliers and customers is positively associated with operational and financial performance. On the other hand, Russell and Taylor (2011) stated that computer and information technology enables real-time processes, online communication as well as the efficient flow of products and services across the supply chain which leads to a reduction in inventory levels.

Shapiro (2001) reiterated that Information Technology (IT) contributes to the development of effective business processes and brings about innovations to the supply chain. Cachon and Fisher (2000) also stated that information sharing across the supply chain reduces costs, speedily facilitates inventory flows and improves the ordering process. Efficiency in inventory management can be attained by substituting inventory with information through automatic replenishment programmes (ARP), where the seller uses information regarding product usage and inventory levels provided by the buyer to determine replenishment quantities (Daugherty et al. 1999).

Mongare and Nasidai (2004) in their investigation concluded that ICTs have enabled centralized purchasing procedures through e-procurement and companies are now able to utilise markets efficiently with the availability of many suppliers offering competitive prices. They found out that the technological integration on inventory control implementation has simplified buying process to make it more efficient as well as reducing inventory costs, increased compliance with procurement laws and regulations, provided better access to information and transparency in markets through a standardized purchasing process and has also contributed to reduced paperwork. Obogone and Lidasan (2005) carried out a case study on the impact of ICT on logistics among firms and discovered that ICTs have allowed less waste, lower transactions, enhanced networks, more efficient supply chains and the ability to efficiently meet the customer needs. Thoo et al, (2011) stated that applying good inventory management can yield significant improvements in inventory cost and customer satisfaction. Companies should adopt information and communication technologies to expand and improve their business into new directions in the demand and supply process linkages.

ICTs contribute to improved communications patterns, an increased demand for coordination of joint activities and new organisational through its ability to store, transmit and process information and speed up inter-organisational activities (Sriram and Stump, 2004). Mongare and Nasidai (2004) discovered that implementation of ICTs will enhance staff skills through training and system integration which allows effective flow of information, speeds up processes and reduces paperwork. Kumar et al (2002) on a case study on Canadian companies reported the successful implementation and use of ERP systems. The companies are able to use the latest technology and there is availability of regular upgrades which makes their system compatible with other system. Franklin et al (2009) from a country industry analysis reiterated that high speed Internet use by employees was positively correlated with productivity in countries where ICT adoption is highest, but negatively related to labour productivity in other countries. It seems most studies have revealed the importance of ICT to the whole supply chain but little has been done to address issues on inventory management as a function of Supply Chain Management.

IV. Research Methodology

In this research, a mixed research approach used both quantitative and qualitative research methodologies. The quantitative approach dealt with numbers and qualitative approach was descriptive and inferential (Gillham 2000). The data collection methods included interviews and questionnaires.

V. Research Findings

Data analysis showed that respondents were aware of the existence of intranet within the organisations and were aware of the impact of its intranet. The results obtained were supported by Cachon and Fisher (2000) and Obogone and Lidasan (2005). The establishment of the link between departments was considered to have many benefits. This was supported by Bagdomine and Zembyte (2009).

Most respondents agreed that using the intranet in the departments to check for spares and requesting such spares benefited. The results also showed that there was a high response by respondents who felt that the link would improve machine service rate.

Table 1: Electronic Control Benefits

	Strongly agree.	Agree	Uncertain.	Disagree
Communication and ICT sharing.	47	40	-	-
Efficient Service Delivery.	101	84	4	4
Benefit to management.	22	17	-	-
Easier spares checking.	25	14	-	-

The respondents also “agreed” that the link will lessen the time when machinery and equipment will be on breakdown and hence improve the performance. Sharing of data and other vital information will improve awareness on costs, stock levels and the rate of changing components or spares. Checking stock levels would be easier than the current system where stocks are checked manually. The overall impact would be customer satisfaction and better business performance. This was supported by Russell & Taylor (2011) and Obogne and Lidasan (2005).

The response showed by linking engineering to the stores department would result in better decision making since management would be better informed about the resources which would be available and then plan accordingly. However network problems and lack of skills to use the computers were some of the challenges which were noted by some respondents during interviews. Users will need to be trained first before implementation of such facility so as to gain full utilisation. Mongare and Nasidai (2004) supported the idea of training employees.

Other benefits which were also mentioned included good planning of jobs, to see if enough parts are available, to see which spares are fast moving and which are not. This will facilitate the stocking of more fast moving spares than slow moving parts by the stores department as a response to demand.

The results also showed that the majority of respondents were of the view that the intranet connection should be extended to all departments in a company. However the use of passwords and antiviruses would be essential to avoid intrusion by unauthorised users but there was divided opinion regarding the safety of company information. Nonetheless this will ensure safe keeping of confidential information within relevant departments or sections of the corporate. Inclusion of other stakeholders had varied opinions with two respondents disagreeing with the idea to include other stakeholders. This could be attributed to confidentiality such as price changes. Such information may find itself in the hands of competitors or manufacturers of pirate goods who might access product data.

VI. Recommendations

In light of the above conclusions, it is therefore recommended that employees be trained in the use of computers so that the proposed link and implementation is expedited and done smoothly. The establishment of the intranet link should also create a database for spares which should be easy and be accessible to all intended users. Additional computers will have to be acquired and induction and training would be needed.

It is also recommended that stakeholders such as service providers to the engineering and stores departments be integrated into the intranet facility (extranet) so that they also improve their service provisions. It is also recommended that expansion and improvement of the intranet connections be done so as to accommodate the additional links. This will enhance the full utilisation of the various benefits of modern technology throughout the organisation to solve the problems of manually acquiring and checking spare parts balances and availability.

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