ELECTRONIC INVENTORY CONTROL SYSTEMS AS A COMPETITIVE TOOL FOR E-RETAILERS

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Abstract

Despite technological advances, some e-retail organisations are still struggling to improve their inventory control performance due to a limited application of such technology, a lack of relevant skills and inadequate supply chain management policies. This article explored how EICS can enhance the competitiveness of an online retailer. Adopting the qualitative paradigm, data was collected through semi-structured interviews. Consequently, data analysis entailed identifying common patterns within the responses and critically analysing them to achieve the research objectives. The findings revealed that with the implementation of EICS, the organisation could oversee inventory stock cycle transactions, perform a transparent inter-branch transfer and security control. Also, the vital competitive advantages, achieved through EICS implementation, include high customer satisfaction due to faster system services rendered than previously. Likewise, a rise in customer service efficiency and higher customer loyalty rates. In sum, this research supports the idea that EICS technology is an essential ingredient for e-retailers to thrive and compete. A major recommendation is for E-retailers to clearly define the attributes and metrics of their inventory control performance in line with inventory control objectives as the EICS competitiveness framework.

Keywords: e-Retailer, electronic inventory control system, e-retailer competitiveness.

1. Introduction

With the increasing use of the internet internationally, the e-retail industry is becoming very competitive. It has become necessary for new and existing businesses aspiring to engage in e-retail to understand the role of the electronic inventory control system in achieving and sustaining competitive advantage within the industry [1]. They argue that for an e-retail industry to compete and secure a competitive advantage in highly competitive markets, it must understand the influence of using an inventory control system [1]. The primary goal of an electronic inventory control system is to link customer demand to e-retailer procurement activities and delivery channels. And the benefit of effective management of the inventory control system is the ability to maintain an adequate stock of items [1].

A practical electronic inventory control system (EICS) is one approach to attaining a competitive advantage [2]. The study defines an EICS as technology, adopted to control and manage inventory electronically through a computer system, linked to a network, enabling it to receive information from wireless devices. The EICS permits a greater exchange of information throughout the inventory control process [2]. Although EICS can have other effects on the inventory control performance of an organisation, this study was concerned only with the effect of EICS on E-Retail Order Management and E-Retailer Competitiveness, specifically improving customer service, satisfaction, and loyalty.

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Despite the advances, made in recent years, some e-retailers are still struggling to take advantage of the capabilities, afforded by technologies, technological skills, and supply chain management policies to improve their inventory control performance [3]. E-retailers deal with a variety of products and services to enable them to meet their customers' preferences. Increasing internet usage means customers are increasingly interested in online shopping [4].

Associated challenges are also rapidly expanding because of e-retail industry growth, the industry becoming more competitive, inconsistent customer preferences, fluctuation in customer identity, and frequent changes in technologies for attending to customers' needs. These challenges can be reduced to three questions in inventory control practices: what to order, how much to order, and when to place the order [5].

Recognizing that EICS can have other effects on the inventory control performance of an organization, the relevant literature was reviewed to determine whether e-retailers can achieve competitiveness-enhancing goals, such as enhanced customer service, customer satisfaction, and customer loyalty through EICS. It is evident from this review, that EICS and e-retailer competitiveness have received little scholarly attention.

Inventory management, which includes the planning and controlling of ongoing activities, related to customer demand, procurement, and sales, is one of the most important factors in today's highly competitive e-retail industry. Consequently, many SMEs depend on utilising EICS to meet their customer demand and improve customer satisfaction to sustain their competitiveness [6]. Effective EICS is a significant resource capable of providing a competitive advantage to e-retailers [7]. Previous literature on EICS focused mainly on the operational performance of manufacturing and retailing. Little literature focuses on the practices of EICS in e-Retailing.

Considering the just-noted knowledge gaps, this study aims to explore the effect of EICS on the competitiveness of e-retailers. Given the aim, the objective of this study was: to determine how EICS improve the competitiveness of selected e-retailers in South Africa. To pursue the stated objective and address the research problem, the following subordinate objectives were formulated: (1) to investigate the EICS, used by a selected e-retailer and (2) to examine how EICS helps the e-retailer to achieve competitiveness.

The rest of the paper is structured as follows. We first discuss the concept of e-retailer and EICS, followed by relevant theories for e-retailer competitiveness. Next, we present the methodology, present and discuss the results. Lastly, we provide the conclusions, limitations, and recommendations for future research.

Literature Review

The literature was explored in this section to establish the research gaps.

1. 1. The term e-Retailer defined

According to Rekik et al. [8], e-retailing is the practice of selling goods and services through an online platform. E-retailing comprises selling products and services from business-to-business (B2B) and business-to-consumer (B2C). E-retailing typically involves extensive displays and specifications of the products and services available. E-retailing gives online customers a particular sensation of the products and services' nature and quality without demanding their physical presence [9]. The phrase e-retailing is mainly used to refer to online business-to-consumer (B2C) transactions that occur through an internet platform [9].

A successful e-retailing business requires strong branding [10]. Moreover, e-retailing platforms must be attractive, regularly updated and effortlessly navigable to meet consumers' changing demands. Products and services must add value to consumers' lives and stand out from competitors' offerings [10]. E-retailers have to price products or services competitively to avoid online customers favouring one business over another based-on cost alone [8]. Strong branding is compulsory for the success of any e-retailer, and their online platforms must offer user-friendly and continuously updated stock information to respond to any change in customer demand [11].

Since the customer's order is the essence of e-retailing, e-retailers need an efficient delivery process to minimise lengthy waiting periods for purchased products or services [12]. Transparency in e-retailing practices is also crucial to prevent customers' lack of trust and disloyalty [13]. A

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similar study agrees that successful e-retailing entails delivering any customer's order promptly, while practising transparency through effective customer service [11]. For Rose et al. [14], e-retailing success hinges on website design efficiency, shopping effectiveness and speedy delivery of the purchased products or services.

Additionally, real-time service delivery, average return and replacement process, the filling period for online orders, and response time rapidity to an online customer's queries are crucial elements to success in e-retailing [9]. In addition, Narayanareddy et al. [10] note that an easy-access website design, an effective shopping frequency period, the speedy delivery of purchased products, and a friendly return and replacement process are crucial in a successful e-retailing business.

However, Rath et al. [9] observe that building and maintaining an e-retailing website can be costly. Infrastructure costs for order fulfilment, warehousing goods, and dealing with returns are additional disadvantages of e-retailing. Herington and Weaven [15] and Rath et al. [9] agree that another disadvantage is the lack of trust among customers in an e-retailer who is not well established, stemming from concerns about identity theft and the absence of physical customer service. Although e-retailing incorporates technology, logistics, and infrastructure in a marketplace with much faster growth rates than retail outlets, people are not ready for it to replace entirely traditional sales stores [14].

Like any retail business, e-retailing is open to several challenges and risks. As a business grows, these risks can affect potential revenue, scalability, margins and customer loyalty [8]. One challenge is the likely similarity of e-retailing operations, such as offering the same range of services to the same customers. E-retailers should therefore differentiate themselves from their competitors, Rath et al. [9], by introducing a product differentiation strategy [8].

1. 2. Overview of the e-retailing in South Africa

By 2022, it is anticipated, that e-retailing in South Africa will account for 2 percent of total retailing, with sales nearly doubling from 2016 levels [16]. While e-retailers in South Africa remain responsible for only a small proportion of overall retail, the South African e-retail industry is maturing in terms of a broader range of operations [16]. Another study argues that clothing is the fastest growing e-retailing sector because of its low barrier to entry. In 2019 clothing was the fastest growing sector in e-retailing in South Africa, with the highest business turnover [17].

1. 3. The Significance of Electronic Inventory Control Systems (EICS)

Through the evolution of technology, information technology (IT) is bringing fundamental changes to how business operates. To achieve and sustain a competitive advantage, businesses must develop the ability to meet customer demand, while increasing customer satisfaction. The primary goal of an EICS is to link customer demand with business procurement activities and delivery channels; in brief, to achieve a competitive advantage.

EICS is detailed as the technology of controlling and managing inventory electronically through a computer system, linked to a network for receiving information wirelessly from different devices [2]. The EICS permits a greater exchange of information throughout the inventory control process. Similarly, EICS uses an information-sharing infrastructure that combines electronic (internet) and inventory control activities to manage inventory control from procurement to selling and distribution [18]. Furthermore, more benefits include EICS lower inventory levels, faster response to inventory problems, higher customer service levels, higher customer satisfaction and improved sales management practices [18].

1. 3. 1. Vendor Managed Inventory System (VMIS)

The fundamental concept of VMIS is that a vendor manages a retailer's inventory on the retailer's premises [19]. It involves a vendor having access to inventory level information and managing expected customer demand, sales, advertising activities, and replenishment policy [20]. VMIS is one of the most widely accepted e-retail inventory management techniques, employed to enhance supply chain efficiency and meet customer service and satisfaction expectations.

Operating under VMIS provides e-retailers with a competitive advantage in terms of higher product availability and market productivity [21], cost reduction and higher customer service levels [22]. Lowered inventory levels, faster inventory turns, reduced ordering, lower administrative costs, increased sales, reduced stock-out costs and reduced demand uncertainty are all perceived as benefits of introducing VMIS [20–22].

VMIS is nevertheless a challenging and complex technology. To ensure its success, the allied business has to establish transparent collaboration and communication with the vendor [23]. Similarly, a successful VMIS contract entails proficient teamwork with strong participation by both allied businesses [22].

1. 3. 2. Radio Frequency Identification (RFID)

RFID has become one of the most promising technologies in the market today [24]. RFID is a tracking and identification technology that utilises a radio frequency transponder. RFID technology supports various applications in diverse fields, such as retail, e-retail, public services, administration, research and development, and sports. RFID can help organisations enhance supply chain management regarding stock identification [25]. With RFID, organisations can manage, track, and secure items through the entire supply chain cycle.

1. 3. 3. Enterprise Resource Planning (ERP)

According to Ting and Lei [26], ERP is a technology for integrating all business functions, supported by multi-module application software. ERP is appropriate to all business organisations, providing a merged view of the activities, occurring throughout the business operation. Finance, logistics, production planning, purchasing, inventory control, sales, marketing, and human resources management are the principal ERP technology modules [27]. Besides, the author stipulates that those orders and other transactions under an ERP system automatically flow inter-departmentally within a business [27]. ERP can provide a visual indication of a product's availability at a glance [26]. Also, with ERP, the customer service department tracks the order's progress through every step, updating the customer's order status [26]. ERP improves departmental coordination within the organisation, while increasing customer satisfaction [6].

Even though implementing an ERP system can be costly, time-consuming, risky, and challenging, many organisations have adopted the technology. Certain businesses are even joining the next wave of web-enabled ERP systems with decision-support competencies [28]. Although some consequences of installing an ERP system can become evident immediately, others come to the surface only after a relatively long period [28]. Achievement of the full benefits from any information technology-based innovation takes several years typically, given the time, required for learning and adaptation to change. Thus, ERP eventually enables an organisation to identify business trends and plan orders long-term [6].

One can therefore classify ERP as a computer network system that enables access to a comprehensive database of information in a business. It is designed to replace paper-based systems by analysing data from all areas of business functioning, including purchasing, manufacturing, distribution, and inventory management. Consequently, ERP is designed around several modules that include finance, logistics, manufacturing, supplier management and human resources, each of which can stand alone or in combination with others.

1. 4. E-Retailer Competitiveness

The growth of an e-retailer depends on its competitiveness. Since an e-retailer operates in a highly competitive market, it must respond productively to the changing market environment. The most vital challenge e-retailers face is gaining and developing a competitive advantage [29].

Dilver [30] defines competitive advantage as the level, to which a business can develop and sustain a defensible position of superiority over its rivals. Another view of the concept is that competitive advantage is simply the business's ability to differentiate itself from its competitors [7]. This further suggests that the competitive advantage of an e-retailer depends on its supply chain competitiveness in meeting its customers' needs [31]. An associated perspective is that achieving a

competitive advantage depends on the value a business can develop for its customers [32]. Value in products or services is what customers pay for, so creating more economic value results in a business achieving a competitive advantage over its competitors [33]. From these views, one can infer that gaining a competitive advantage implies that a business can better satisfy customers' needs than its rivals.

Compared to brick-and-mortar retailers, e-retailers face severe competition from almost any geographical location [32]. Maintaining a competitive position in customers' minds has become difficult as customers have access to various online market platforms. Simultaneously, creating customer satisfaction and gaining customer loyalty are delicate challenges in e-retailing [32]. Atnafu et al. [34] maintain that nowadays, e-retailers' competitiveness hinges on order management techniques, financial control, IT and web applications to increase responsiveness and flexibility, and providing 24/7 customer service.

E-retail business markets are hyper-competitive because, given the low cost of establishing an online shop, there are no barriers to new entrants [32]. Attaining a competitive advantage is vital [31].

To sum up, one can describe e-retail competitiveness as the ability to deliver products and services more effectively and efficiently than one's competitors. E-retail competitiveness is the advantage, gained by delivering more excellent customer value than one's competitors, either through lower prices or by offering more benefits that defend higher prices. Overall, e-retailers must be customer-oriented to survive in a hectic competitive market environment by – for instance – offering a customised service to individual customers. That is why the measurement of competitiveness in this study focuses mainly on customer service, customer satisfaction and customer loyalty.

1. 4. 1. Customer Service

As e-retailers increase and compete fiercely, customer service increasingly influences customers' choice of e-retailers [35]. Thus, the core strategic value for any e-retailing business is to provide customer service. Customer service involves satisfying and keeping customers and eventually creating customer loyalty [36].

Claessen [37] defines customer service as comprising organised sets of work activities to meet specific business results for customers. Claessen [37] suggests that three levels characterise customer service. First is the reliability level, meaning the business performs essential customer services. Second, the flexibility level is the ability to respond to and amend a failure in the customer service system. The last level is creativity or innovation, involving developing customer value-added programmes [38]. Customer service is a measure of service empathy, access time and staff courtesy, service quality, speed, and responsiveness. Customer service affects customer satisfaction and loyalty, hence business competitiveness [18, 39].

For Chen [36], there are two modes, by which an e-retailer can provide customer service [36]. The first is standardised customer service, founded on establishing consistent rules and procedures. Standardised customer service offers a uniform service to customers with little customer interaction in the service encounter [36]. The second mode is customised customer service, characterised by flexible rules and procedures to offer varied and individually customised services. Customised customer service is designed to solve a specific customer problem and adapt products, services, or communication to an individual customer's needs.

In e-retailing, there is little contact between the customer and the retailer, which makes it imperative to implement workable interactive customer service [15]. By offering a functioning website, on-time deliveries, flexible return policies and more, the primary goal of e-retailer customer service is to make online shopping effortless [15].

In short, customer service is a set of actions, designed to improve customer satisfaction before, during and after a purchase. It is about offering tangible or intangible value in customer service to differentiate the retailer and enhance its competitiveness.

1. 4. 2. Customer Satisfaction

For Rahman and Han [39], customer satisfaction is a product of service evaluation by customers in respect of their needs and expectations. A high degree of customer satisfaction results in

customer retention and boosts sales [15]. Failure to meet customers' expectations causes disappointment and a perception of poor service quality [14]. In e-retailing, customer satisfaction is a measure of the contentment of the customer with prior purchasing experience(s) [19] or an evaluation of a product or service's ability to meet a customer's expectations [39]. The main objective of customer satisfaction is to achieve customer loyalty. According to [32], enhancing customer satisfaction and achieving customer loyalty are significant challenges, faced by e-retailers. Consistency is key.

To conclude, customer service is productive for customer satisfaction, and customer satisfaction is crucial for building customer loyalty.

1. 4. 3. Customer Loyalty

Keeping customers loyal to a business is a significant focal point in achieving competitiveness in a highly competitive market. Besides, Claessen [37] defines customer loyalty as a recurring purchase of a brand, which attests to his/her satisfaction. For Goutam and Gopalakrishna [13], customer loyalty is an uncompromising commitment to always re-buying a service or product. Thus e-loyalty is a desirable attitude that leads to repetitive purchasing behaviour in respect of a particular e-retailer [40].

According to Napitupulu and Aditomo [40], technology directly affects customer satisfaction and loyalty. The knowledge sharing in e-environments concerning customers' perceptions, attitudes, and behaviour is vital to customer loyalty [13]. Website technology enhances customer satisfaction and loyalty, offering an efficient shopping experience [41]. A company needs effective website technology to compete in an e-commerce environment that provides high-quality customer services. Likewise, Al-Karim [42] notes that a business can keep a customer long-term if it can respond to customer demand with improved customer service. Also, in e-retailing, customer loyalty serves as an information source for other customers, and building customer loyalty remains a considerable but vital challenge.

1. 5. Summary

With the increasing use of the internet, consumers worldwide are becoming more interested in online shopping [8]. A massive expansion matches this trend in e-commerce. As identified in the introduction, the research problem for this study is that some e-retailers have yet to take advantage of available technology, technological skills and supply chain management policies to improve their inventory control performance [3].

This article aimed to ascertain how EICS can enhance the competitiveness of an online retailer.

2. Materials and Methods

2. 1. Research design, Case and Participants

Conducted in 2020, this study used an e-retailer as a case study to source appropriate data to meet the research aim. The study employed a qualitative research approach to conduct interpretive, exploratory research. Interviews were used to gather appropriate information to meet the research aim.

For this study, a qualitative research methodology was chosen due to the necessity of interacting with respondents and obtaining their authoritative perspectives first-hand. Quantitative research methods tend to involve no interaction with people [43], and in this context, quantitative research would limit the description of the phenomenon involved. According to Jackson [44], qualitative studies encompass an intensive and detailed analysis of the data, collected from relatively few respondents. Also, Keutel and Werner [45] argue that interviews are the most suitable for data collection in a qualitative study, enabling a subjective understanding to produce new conceptual and theoretical knowledge of a phenomenon. Qualitative methods are sometimes criticised because the researcher's subjectivity intrudes, and non-probability sampling is typically employed [43]. The purpose of this study is not to generalise the results but to explore the case in-depth to understand a specific phenomenon.

An e-retailer was selected as a case study to investigate the role of EICS on the e-retailer's competitive advantage. For this purpose, the study used an interpretive research design to conduct exploratory case study research. The study employed an exploratory research design to discover new concepts and gain new knowledge and understanding of the phenomenon [46].

Personnel in the departments, dealing with EICS and e-retailer competitive advantage, constitute the target population of this study. The selected e-retailer uses an integrated EICS, operating with other systems to serve the entire business. Participants were targeted based on their expertise and knowledge of the system, which positioned them appropriately to respond to questions, relating to the EICS utilised and the competitive advantage achieved. The target population for this study comprised only personnel, dealing directly with the e-retailer inventory.

This research used purposive sampling, a non-probability technique, usually preferred for case study research [46]. Purposive sampling occurs when the sample is chosen based on the researcher's judgement [46, 47]. The researcher makes this judgement with reference to target population characteristics, such as individuals' involvement, experience, and knowledge of the problem to be explored [47, 48].

Given that this research is exploratory, the findings were not generalised. The strategic participants, selected for this study, were:

– one participant in customer service and marketing (Branch Manager)

– two participants in sales order management (Sales Division Manager, Sales specialist)

– two participants in inventory management (Warehouse Manager, Procurement Specialist)

2. 2. Data Collection

Semi-structured, face-to-face interviews constituted the primary source of data. The method was appropriate for this study. The interviews contained questions about EICS, its implications for competitive advantage via customer service, customer satisfaction and customer loyalty. Keutel and Werner [45] define the interview as a qualitative research technique, involving face-to-face conversations with a small number of respondents to explore their viewpoints on a specific research idea. Leal Filho and Kovaleva [48] identify three different forms of interview: structured, semi-structured and unstructured. Semi-structured interviews were chosen as a data collection method to obtain full phenomenological data and enable in-depth tracing of the hands-on experience of employees, thus meeting the study's objectives.

At the Faculty's Research Ethics Committee meeting on 2 May 2018, consent and ethical clearance were granted to the researcher to carry out the study. Additionally, all interviewees who agreed to participate in the data collection process were informed of all ethical considerations before the interview. The researcher solicited and received voluntary participation consent in that participants were given a declaration form, which they were required to complete and sign as evidence of their consent.

2. 3. Research Data Analysis

The process, used to perform the qualitative data analysis, involved persistent critical reading and interpretation of the data collected, leading to increased understanding [48]. Data analysis thus involved identifying common patterns within the responses and critically analysing them to achieve the research aim and objectives. The interviews were audio recorded, and the recordings were transcribed verbatim before data analysis began. Notes, made during the interviews, were also transcribed and reviewed for consistency. The data was then summarised and categorised and subjected to thematic analysis.

The following section presents the analysis and interpretation of the data collected.

3. Results and Discussion

This section provides an analysis of the qualitative data, gathered to achieve the study's objectives. The fieldwork was conducted at an e-retailer, and the unit of analysis was the role of EICS on that e-retailer's competitiveness. The analysis centred on how customer service, customer satisfaction and customer loyalty were enhanced through the use of EICS.

Data analysis and interpretation of data

This section is dedicated to qualitative analysis of the concepts and meanings, gathered through data collection.

The research question was subdivided into two research sub-questions in order to address the following main question: *How can EICS improve the competitiveness of e-retailers in South Africa?*

The research sub-questions were divided into two parts: first, to collect data about EICS currently in use; second, to identify customer service, customer satisfaction and customer loyalty as aspects of e-retailer competitiveness, achieved through EICS usage.

Question One: What is the EICS that the e-retailer uses to be competitive?
The respondents answered the following questions (**Table 1**).

Table 1
EICS used to be competitive

Questions	Respondents	Responses
1	2	3
which EICS do you use in your organisation?	branch & operation manager	for our warehouse management system, we use waerlinx, netsuite: erp system
	warehouse supervisor	we use waerlinx as our warehouse management system. the other two systems we use for our backorder are netsuite and locad. locad pulls out the backorder report for our inventory demand, and netsuite is for our sales
	procurement specialist	we are currently using waerlinx, netsuite: erp system
	sales specialist	only two systems are implemented netsuite: locad and waerlinx
	sales supervisor	so, we use two systems. we use waerlinx and locad. waerlinx is for our inventory control at the branches. so, it's the inventory system we used for receiving inventories in the branch, and everything has to do with how much stock we have, that's the system that releases the order that we have for the customer, and that comes from our sales side. so, it's a different system on sales, but a warehouse that manages the stock, that's what waerlinx does.

locad is the one we use at the distribution centre. so, we got a distribution centre where they use locad that helps them with the prediction for the ordering of stock. for example, it will look at our sales, look at how much stock we need to order for the suppliers and then generate the purchase order from there. |
What are the modules/ implementations areas of the chosen EICS?	branch & operation manager	warehouse management, sales
	procurement specialist	sales and distributions, warehouse, and procurement
	sales specialist	more like inventory stock or order replenishment on locad
	warehouse supervisor	our system is inventory only, so you get basic reporting out of it for picking times and stuff like that. the system generates information regarding the inventory, such as inventory location and stock level quantities.

also, it gives us live data, such as who was the last person to handle a certain inventory code and when the last inventory was counted. and if there was a sales order put through, the system will give us the sales order number and how long it took the person to pick the order. we can say there is also a sale module. the sales module is more for reporting. |
| | sales supervisor | waerlinx is more like for inventory management, distribution of stock, order fulfilment or replenishment, and locad is for forecasting. |

Continuation of the Table 1

1	2	3
How did you evaluate the EICS before you adopted it?	branch & operation manager	we went through a screening process. we screen a range of three to four service providers, and we obviously look in terms of pros and cons, such as logistics, procurement sales, and pretty much what requires for one system
	warehouse supervisor	yeah, the adoption of the system was evaluated by different people, and i was not part of the evaluation process.
	procurement specialist	really don't know. i was not here yet
	sales specialist	the evaluations were done by senior and support team
	sales supervisor	i was not involved in the decision to use the system. but from what i understand, what they did was to look at the system that we used before and then look at trying to get something that will do everything that the previous system used to do and then do other things as well. because we wanted to have a system where it will be just easy to do everything only from one system and not have to use other systems, like, for example, not have to use an excel sheet when counting stock. we were trying to get a system that would be easier to report from it.
What are the benefits, gained from the use of EICS?	branch & operation manager	the system has given us the benefits of being the only one in the industry using these two systems at the moment. the cloud-based system has eliminated risk at the office in terms of service and reduced operating risks cost.
	warehouse supervisor	definitively by doing things much quicker and more accurately
	procurement specialist	so fast, liaising with the supplier is more efficient and effective.
	sales specialist	we stock much more accurate on customer demand, and stock counting is more effective.
	sales supervisor	a lot. so, counting our stock now is much easier and quicker, and it's very effective now because we can literally count stock and still operate at the same time. previously when stocktake was performed, we had to close and shut off the system and count stock because then, you couldn't count and operate simultaneously. but at the moment, sales can still go on, load orders, and we can still count stock. so, it makes our operation much more manageable, much more effective, and also in terms of doing our variances when counting stock, it makes it easy. it's easier for everybody across all our branches to see precisely how much stock we have at any given time, in any given branches.
What challenge (s) did you face when adopting the EICS?	branch & operation manager	the challenge was designing the system for the company's requirements/needs. so, we went through an extensive three to six months planning process to ensure that the system was designed to our requirements, and that was for both systems, the erp system and the warehouse management system.
	warehouse supervisor	the change from the old system to the new one was a challenge because it was completely different from the system we used before. but now we have got used to the new system, and it is much better, it speeds up the process much, a lot against the old system.
	procurement specialist	i do not, was not part of the team
	sales specialist	the new interfaces were completely different from the previous one
	sales supervisor	if you are moving from one system to another, there are many challenges because, first, you were used to a particular system. another challenge at the time was that the new one was an out-of-the-box system that needed to be customised to the company's needs. and in the beginning, while we were still customising and trying to get everything that needed to be done, we realised that certain things don't really work the way they should, and different customisation use was required. so, the design of the system according to the organisation's needs was the biggest challenge. but eventually, when all the customisations were complete, everything was working, and it became easier. another challenge was getting people to understand how the new system works because people were used to the previous system.

Business, management and accounting

Summary and discussion

It was deduced from the study, that ERP (LOCAD, NetSuite) and warehouse management system (WAERlinx) were the two EICS used. For EICS modules, all participants mentioned Warehouse management, Procurement, and sales and distribution were the three EICS modules implemented. The selected e-retailer is currently the only e-retailer in South Africa using WAERlinx and NetSuite, which means that its operating practices are much quicker and more accurate, especially in terms of inventory counting and predictions.

The benefits, gained from the usage of the adopted EICS, include the effectiveness of the business to operate effectively during stock counting [27]. Further, being a cloud-based system, the EICS has eliminated the business risk in terms of service and reduced operating risks cost [2]. Plus, the business can see exact inventory or stock levels at any time. And liaise with suppliers more efficiently and effectively [9].

The screening process of the EICS was conducted before its adoption in terms of the logistics, procurement and sales management, needed to operate productively to meet business needs and customer requirements. The design of the system according to the organisation's needs was the biggest challenge [18]. But eventually, after the complete customisations, all the implemented modules were integrated and working as intended. Another challenge was getting people to understand how the new system interfaces.

As per Wanjohi et al., [18] and Rath et al. [9] investigation, there is a strong relationship between EICS influences and e-retailers, which further is linked to the competitiveness of e-retailers. EICS technology emerged as a significant contributing factor to the competitiveness of the e-retailer by optimising and automating e-retailer inventory management and order management processes and enforcing inventory and order policies.

Question Two: How does using EICS enable e-retailers to achieve competitiveness?

The respondents answered the following questions (**Table 2**).

Table 2

E-retail competitiveness

Sub-Questions	Respondents	Responses
1	2	3
What are the most important advantages that your organisation has been able to achieve from the implementation of the EICS?	Branch & Operation Manager	So, a lot of companies take on these systems to reduce employees' overhead, but we haven't, we have kept every single employee we have had. The EICS has made our operation faster. The main reason we took EICS was to service our customers more quickly, to have a higher replenishment rate or fulfilment rate, and to reduce overheads in terms of operations expenses, such as packaging, courier, freights, and foreign currency exchange. Besides, the order processing rate time is faster and more accurately, we can predict the market and have more control over our stocks. There have been a lot of benefits on that side. It is costly to use the systems, but the benefits far outweigh the cost.
	Warehouse Supervisor	Since the implementation of the EICS, we can serve the customers a lot quicker. Definitely, the system is faster, more accurate, and we got fewer complaints. Besides, it also helps to track people's behaviour activities in the warehouse. It shows which employees are slack, who's not slacking and who's actually performing. The benefit is a lot
	Procurement Specialist	Customers are serviced faster, we have a higher replenishment rate/fulfilment rate, and overheads have been reduced in terms of operations expenses, such as packaging, courier, and freights.
	Sales Specialist	Order processing time is more accurate and faster, both systems can predict our customer demand and have more control over our stocks.
	Sales Supervisor	In terms of stock, it is easier to manage our stock levels now than before. The second most important thing is that our customer order turnaround time is quicker, meaning orders are much quicker fulfilled than before. Also, our EICS automatically prioritises customer orders according to their urgency, customer location and delivery methods or collection. The system prioritisation of order is one of the most important benefits of implementing the EICS. Also, with the EICS, we can do our stock prediction properly, enabling us to have most of the stock all the time.

Continuation of the Table 2

1	2	3
How would you rate the contribution of the EICS to the customer service, customer satisfaction and customer loyalty of your organisation? (1) High (2) Medium (3) Low? Why?	Branch & Operation Manager	So, when we implemented the system, it was 6/10, we are currently at about 8/10, and we are still focusing on certain aspects of the EICS. Again, the implementation has improved our customer service, delivery time frame, replenishment, and fulfilment rate, and we will only be happier if we get to about 98 per cent (%). We still have quite a way to go, and there is a lot of development we need to do on the system. If I have a customer to rate us, I will hope that most of them will say 8/10 at the moment; and we are very proud of it.
	Warehouse Supervisor	Most of our customers are satisfied with the system, since we can service them faster than before. Based on it, we can say that customer satisfaction is definitely higher. Regarding customer loyalty, the nice thing about the system is if we make promises to the customers, 99% of the time, we keep our promises, which makes our customer loyalty higher as well.
	Procurement Specialist	I would say our customers are much more pleased with our systems and online platform. This has helped with increased customer demand. We can conclude that customer service, customer satisfaction and loyalty are higher.
	Sale Specialist	Having better customer service, such as the ability to predict our customer demand and always having stock, have increased our customer satisfaction and loyalty.
	Sales Supervisor	The EICS is very good, to be honest, because it services our customers more efficiently than before in such a way if the customer places an order, automatically, it notifies the customer via an email with a collection number. The delivery is executed based on the collection number. Also, the customer gets a notification when the order is ready for collection and a detailed report of the receiving order. Customers are much more satisfied, and all these facts have increased our customer loyalty. Last, being able to predict our stock accurately and always having stocks all the time have made our customer satisfaction better than it was before.

Summary and discussion

The empirical findings revealed that the most vital benefits, achieved through the implementation of their customised EICS, included reduction of overheads in terms of operations expenses, such as packaging, courier, freights and also employees' overheads, faster customer service through a higher replenishment rate, and market prediction (customer demand) [3]. It also enabled them to have more control over inventory, track people's activity in the warehouse and speed up order turnaround time. With their EICS order, processing time more accurately and faster, both systems can predict the customer demand and have more control over stocks, satisfying customer demand.

In terms of customer service, satisfaction and loyalty, respondents gave a high rating to the use of EICS in the selected e-retailer (**Table 2**). The findings imply that EICS had improved customer service and delivery time frames. Their customers are satisfied with the system, as they are served faster and more accurately than previously. The company also boasts higher customer loyalty rates because it can fulfil promises, made to its customers, more effectively [40]. In conclusion, having better customer service, such as the ability to predict customer demand and always having stock, has increased business customer satisfaction and loyalty [33]. Thus, the e-retailer, adopting EICS, has greatly improved customer service, satisfaction, and loyalty, hence its competitiveness.

Research Contribution

The study contributes on two levels, practical and methodological.

The Practical Contribution

Technology is continually changing, and technological change brings change also to business operations. Given the increased use of the internet and online shopping, e-retail is expanding, and there is a growing demand for e-retailers with more competent EICS to achieve and sustain their competitiveness. The outcomes of this study can contribute to the competitiveness and overall performance of existing and prospective e-retailer operations. Improved understanding of the phenomenon under study can help e-retailers develop better inventory strategies and policies, and

the general framework, proposed above (and reproduced below), can assist firms with adopting and implementing EICS. As shown, the study also contributes to the literature, addressing the complexity of adopting EICS in e-retailing to achieve competitiveness.

The Methodological Contribution

This study used an interpretative case study approach and applied qualitative research methods. The study gathered data from semi-structured interviews at a selected e-retailer. The interviews were one-on-one discussions, held to gain in-depth information on the phenomenon under study. The approach conduced to a better understanding of the role of EICS in the competitiveness of e-retailers. More specifically, the study revealed how the managerial level of personnel at the e-retailer perceived the phenomenon under study in their environment. These findings remain context-specific and, although they led to the formulation of a framework of guidelines, are not necessarily generalisable.

Furthermore, the contribution of this study is associated with its design as a qualitative study that reports and analyses the participants' personal experiences. The outcome of the inductive reasoning is the provision for inventory control systems decision-makers of an EICS framework, developed based on the understandings and views of EICS users. The research outcome is therefore grounded in real-world experience.

Study Limitations. Academic literature on the role of EICS on e-retailers is limited, so this study could only use what was available. Also, the study focused solely on the effect of EICS in the competitiveness of e-retailers in South Africa. The study focused on managerial personnel from the following departments of the selected e-retailer: Customer Service and Marketing personnel (Branch Manager), Sales order management personnel (Sales Division Manager), Inventory management personnel (Warehouse Manager).

Recommendations

Given the research findings, in addition to the concluding remarks, the following recommendations are made to enhance the competency of EICS in driving inventory control performance to achieve competitiveness in the e-retailing sector.

– E-retailers are required to clearly define the attributes and metrics of their inventory control performance in line with inventory control objectives as the EICS competitiveness framework. Preferably, the competitiveness of their inventory control performance through EICS should be measured according to:

– The reliability, responsiveness and agility of EICS in the inventory control and order management processes to serve customers effectively;

– The volume of operating overhead costs to achieve competitiveness is based on customer service, customer satisfaction and customer loyalty.

Future Research

To conclude, this study leaves some areas open for further research. Any further research on this topic will help e-retailers to understand the role of EICS in e-retailing as a source of competitiveness. Possible topics for further study:

– The impact of EICS on the financial performance of e-retailing. For instance, the study might investigate the relationship between EICS, operating costs and revenues.

– The impact of EICS on the inter-warehouse process of retailing. The study of this second topic should attempt to explain the perspective on using EICS for successful inter-branch applications of EICS.

– The impact of EICS on the e-retailer platform security. This study might attempt to determine how EICS can prevent security vulnerability.

4. Conclusion

Some online retailers are still having trouble, improving their inventory control performance because of insufficient investment in technology, a lack of trained personnel, and outdated approaches to supply chain management. Hence, the purpose of this research was to examine how an EICS can improve an online retailer's ability to compete. And it emerged from the selected case study, that the competency, afforded by an EICS, significantly improved the efficiency and

effectiveness of an e-retailer. This enhancement is derived from the expertise, modules implemented, and the IT tools, associated with the EICS. It is therefore arguable that through the inventory control competency of EICS, e-retailer can achieve their inventory control performance objectives.

The overall findings of this study lead to the conclusion that EICS technology is a vital component in the performance of an e-retailer compulsory for it to be competitive in the market. The EICS inventory control competency empowers e-retailers to achieve their inventory objectives. In the e-retailing sector, e-retailers, such as the selected e-retailer for this study, benefit from the up-to-date technology, inventory control competency and expertise, associated with EICS. The benefits include eliminating inventory shortage, improving inventory replenishment efficiency, enhancing inventory turnover and maximising customer service, satisfaction and loyalty. These benefits help to reduce risks, relating to operating costs. Designing the right system to meet the business's needs, changing from the previous system to the new EICS, and customisation of the new system were the main challenges, faced during the adoption of the technology.

In summary, the utilisation of customised EICS improves the competency of inventory control performance to help an e-retailer achieve competitiveness. Based on the findings of this study, the following recommendations are made as a framework for adopting EICS to improve inventory control performance in e-retailers and help them achieve competitiveness.

References

[1] Chandra, P., Sunitha, G. (2012). E-tailing–the mantra of modern retailer's success. Journal of Arts, Science & Commerce, 2 (2), 42–48.

[2] Almajali, D., Mansour, K., Masa'deh, R., Maqableh, M. (2016). The Impact of Electronic Supply Chain Management Usage on Firm's Performance. International Journal of Communications, Network and System Sciences, 9 (6), 280–293. doi: https://doi.org/10.4236/ijcns.2016.96025

[3] Patil, H., Divekar, Brig. R. (2014). Inventory Management Challenges for B2C E-commerce Retailers. Procedia Economics and Finance, 11, 561–571. doi: https://doi.org/10.1016/s2212-5671(14)00221-4

[4] Ritha, W., Haripriya, S. (2016). An impact of e-tailing in inventory system. International Journal of Latest Research in Engineering and Technology, 2 (8), 40–46.

[5] Grubor, A., Milićević, N., Djokic, N. (2016). The Effect of Inventory Level on Product Availability and Sale. Prague Economic Papers, 25 (2), 221–233. doi: https://doi.org/10.18267/j.pep.556

[6] Ahlawat, J. (2017). Role of ERP in e-commerce supply chain management system. International Journal of Advanced Education and Research, 2 (4), 61–65.

[7] Awwad, A. S., Khattab, A. A. A., Anchor, J. R. (2013). Competitive Priorities and Competitive Advantage in Jordanian Manufacturing. Journal of Service Science and Management, 6 (1), 69–79. doi: https://doi.org/10.4236/jssm.2013.61008

[8] Rekik, Y., Syntetos, A., Jemai, Z. (2015). An e-retailing supply chain subject to inventory inaccuracies. International Journal of Production Economics, 167, 139–155. doi: https://doi.org/10.1016/j.ijpe.2015.04.011

[9] Rath, S. K., Behera, B., Trivedi, R. (2016). E-tailing: the shifting visage of retail business in India. IOSR Journal of Computer Engineering, 18 (1), 1–10.

[10] Narayanareddy, M., Prasannakumar, M., Srinivasareddy, B. (2016). E-retailing: strategies, growth and problems. International Journal of Engineering Technology Science and Research, 3 (9), 1–5.

[11] Ruby, M. (2016). E-tailing in India - growth, challenges and opportunities. Journal of Marketing and HR, 2 (1), 102–112.

[12] Ishfaq, R., Bajwa, N. (2019). Profitability of online order fulfillment in multi-channel retailing. European Journal of Operational Research, 272(3), 1028–1040. doi: https://doi.org/10.1016/j.ejor.2018.07.047

[13] Goutam, D., Gopalakrishna, B. V. (2018). Customer loyalty development in online shopping: An integration of e-service quality model and commitment-trust theory. Management Science Letters, 8, 1149–1158. doi: https://doi.org/10.5267/j.msl.2018.8.009

[14] Rose, S., Clark, M., Samouel, P., Hair, N. (2012). Online Customer Experience in e-Retailing: An empirical model of Antecedents and Outcomes. Journal of Retailing, 88 (2), 308–322. doi: https://doi.org/10.1016/j.jretai.2012.03.001

[15] Herington, C., Weaven, S. (2009). E-retailing by banks: e-service quality and its importance to customer satisfaction. European Journal of Marketing, 43 (9/10), 1220–1231. doi: https://doi.org/10.1108/03090560910976456

[16] Alexander, B., Van Vuuren, J. J., Hermanus, T., Dassah, R., Mason, R. B. (2016). E-retail in South Africa and the impact on skills development in the South African retail sector. Applied Research Leadership Development Service to Retail Community. Cape Town: Cape Peninsula University of Technology.

[17] Wills, B. (2013). Online shopping vs in-store shopping. Available at: http://visual.ly/online-shopping-vs-store-shopping-which-one-you-prefer Last accessed: 4.02.2019

[18] Wanjohi, E. W., Mugo, R., Wagoki, J. (2013). Effectiveness of electronic inventory systems on customer service delivery in selected supermarkets in Kenya. European Journal of Business and Management, 5 (32), 46–60.

[19] Pruthi, C. D., Gupta, P. (2017). The impact of online shopping on customer satisfaction in Indian marketing". International Journal of Marketing & Financial Management, 5 (5), 1–11.

[20] Radzuan, K., Rahim, M. K. I. A., Anuar, H. S., Nawi, M. N. M., Osman, W. N. (2015). Inventory Management Practices and Its Effects on Vendor Managed Inventory Performance. Advanced Science Letters, 21 (6), 2114–2117. doi: https://doi.org/10.1166/asl.2015.6228

[21] Marquès, G., Lamothe, J., Thierry, C. Gourc, D. (2008). Vendor managed inventory, from concept to processes, for an unified view. ILS 2008 – 2nd International Conference on Information Systems, Logistics, and Supply chain. Bordeaux: University of Wisconsin, 536–546.

[22] Rana, S. M. S., Osman, A., Islam, A. (2015). Retail supply chain and vendor managed inventory system: a review. International Journal of Business and Technopreneurship, 5 (1), 1–8.

[23] Vieira, G. E., Portes, A. N. (2014). The impact of vendor managed inventory on the bullwhip effect in supply chain. Paper presented at Third International Conference on Production Research – Americas' Region 2006 (ICPR-AM06).

[24] Yoo, S. G. (2017). Stock management system using RFID and geolocation technologies. International Journal of Applied Engineering Research, 12 (24), 14314–14321.

[25] Boyinbode, O., Akinyede, O. (2015). A RFID based inventory control system for Nigerian supermarkets. International Journal of Computer Applications, 116 (7), 7–12. doi: https://doi.org/10.5120/20346-2531

[26] Cai, T., Liu, L. (2015). Integration of B2B E-commerce and ERP in Manufacturing Enterprise and its Application. Advances in Intelligent Systems Research. doi: https://doi.org/10.2991/meici-15.2015.141

[27] Ociepa-Kubicka, A. (2017). Advantages of using enterprise resource planning systems (ERP) in the management process. World Scientific News, 89, 237–243.

[28] Yi, L., Tu, J. (2015). Method Research to Improve Inventory Management based on Enterprise Resource Planning(ERP) Environment. Advances in Engineering Research. doi: https://doi.org/10.2991/asei-15.2015.407

[29] Troshani, I., Rao, S. (2007). Enabling e-business competitive advantage: perspectives from the Australian financial services industry. International Journal of Business and Information, 2 (1), 80–103.

[30] Dilver, S. (2015). Competitive Advantage Through Effective Management of Information Technology: A Case of Small, Medium and Micro- Sized Enterprises (SMMEs) in Southern Turkey. Cape Peninsula University of Technology.

[31] Hristoski, I., Kostoska, O., Kotevski, Z., Dimovski, T. (2017). Factors affecting the competitiveness of e-commerce firms: a critical appraisal. The Third International Balkan and Near Eastern Social Sciences Congress Series (IBANESS) Conference Proceedings, 1079–1090.

[32] Subramanian, N., Gunasekaran, A., Yu, J., Cheng, J., Ning, K. (2014). Customer satisfaction and competitiveness in the Chinese E-retailing: Structural equation modeling (SEM) approach to identify the role of quality factors. Expert Systems with Applications, 41 (1), 69–80. doi: https://doi.org/10.1016/j.eswa.2013.07.012

[33] Srivastava, M., Franklin, A., Martinette, L. (2013). Building a Sustainable Competitive Advantage. Journal of Technology Management & Innovation, 8 (2). doi: https://doi.org/10.4067/s0718-27242013000200004

[34] Atnafu, D., Balda, A. (2018). The impact of inventory management practice on firms' competitiveness and organizational performance: Empirical evidence from micro and small enterprises in Ethiopia. Cogent Business & Management, 5 (1). doi: https://doi.org/10.1080/23311975.2018.1503219

[35] Öörni, I. (2017). Customer service in e-commerce: Ecosto online store. Seinäjoki University of Applied Sciences.

64

[36] Chen, S.-C. (2012). The customer satisfaction–loyalty relation in an interactive e-service setting: The mediators. Journal of Retailing and Consumer Services, 19 (2), 202–210. doi: https://doi.org/10.1016/j.jretconser.2012.01.001

[37] Claessen, J. J. M. (2013). Customer loyalty in an online retailing environment in the Netherlands. Rotterdam: Erasmus University.

[38] Feihua, Q. (2011). Customer Retention in E-commerce business. HAAGA-HELIA Universit of Applied Sciences.

[39] Rahman, H., Han, L. (2011). Customer satisfaction in e-commerce: a case study of China and Bangladesh. University West.

[40] Napitupulu, T. A., Aditomo, H. C. (2015). Factors affecting customer loyalty in business e-commerce: a case of Indonesia. Journal of Theoretical and Applied Information Technology, 76 (3), 386–392.

[41] Khoee, J. H. (2011). Influential factors of customer e-loyalty in Iranian e-stores. Lulea University of Technology.

[42] Al Karim, R. (2013). Customer Satisfaction in Online Shopping: a study into the reasons for motivations and inhibitions. IOSR Journal of Business and Management, 11 (6), 13–20. doi: https://doi.org/10.9790/487x-1161320

[43] Ponelis, S. R. (2015). Using Interpretive Qualitative Case Studies for Exploratory Research in Doctoral Studies: A Case of Information Systems Research in Small and Medium Enterprises. International Journal of Doctoral Studies, 10, 535–550. doi: https://doi.org/10.28945/2339

[44] Jackson, S. L. (2011). Research methodology. Available at: https://research-methodology.net/research-methodology/ Last accessed: 05.04.2019

[45] Keutel, M., Werner, M. (2011). Interpretive case study research: experiences and recommendations. MCIS Proceedings, 1.

[46] Rahi, S. (2017). Research design and methods: a systematic review of research paradigms, sampling issues and instruments development. International Journal of Economics & Management Sciences, 6 (2).

[47] Broadhurst, K., Holt, K., Doherty, P. (2012). What is research design? Explanatory/descriptive research. Qualitative Social Work, 11 (5), 517–534. doi: http://doi.org/10.1177/1473325011401471

[48] Leal Filho, W., Kovaleva, M. (2015). Research methods. Environmental Science and Engineering. Subseries: Environm.