



An ICT-Based Approach to Improving Inventory Management Using Odoo ERP in Bandung SMEs

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Abstract. This study explores how the Inventory module in Odoo ERP can help small and medium-sized enterprises (SMEs) improve the way they manage inventory. The research is done with a descriptive qualitative approach, supported by some literature review and a look at the main features of the system. From the findings, Odoo Inventory has several useful tools, such as real-time stock monitoring, automatic reordering, and built-in reporting. These tools are quite practical because they can reduce stock errors, make daily tasks easier, and give clearer information about inventory. Another point is that Odoo is not only about technology. Since it is modular and open-source, SMEs can use it step by step and adjust it to their needs. This makes it more friendly for companies that do not have big resources. In the end, Odoo Inventory can support SMEs to be more efficient in managing stock and also prepare them slowly for bigger digital changes in the future.

Keywords: SMEs, Inventory, Enterprise Resource Planning, and Odoo.

1 Introduction

Small and medium-sized businesses (SMEs) are really important for Indonesia's economy. They help the country grow, give a lot of people jobs, and even reduce poverty. Right now, SMEs make up more than 60% of Indonesia's GDP and employ almost 97% of the workforce, which shows how big their role is [1].

But many of these businesses still use manual ways to handle their inventory. Because of that, they often deal with problems like wrong stock numbers, messy paperwork, and poor communication between departments. These issues can easily cause overstock or stockouts, which disturb daily operations and hurt long-term growth [2].

One big reason why this happens is the gap in digital use. Many SMEs can't afford digital tools or don't have the right technical skills to use them. This makes it harder for them to switch from manual work to digital systems, and in the end, it affects their competitiveness in today's digital market [3].

Back then, ERP systems were something only big companies could afford. They were too pricey and complicated, so smaller businesses didn't really have a chance to use them. Things changed when open-source platforms like Odoo showed up. Odoo is

cheaper, flexible, and can be adjusted to fit the needs of smaller businesses, so they can upgrade how they work without spending crazy amounts of money.

Take the Odoo Inventory module as an example. It shows stock levels in real time, can remind you when it's time to reorder, and gives clear reports in one place. These simple features already solve a lot of the usual problems SMEs face with their inventory. Plus, since it's affordable and easy to scale up, it fits well for growing businesses. It also helps them make decisions based on real data and slowly be part of the bigger digital shift happening in Indonesia [3].

1.1 Research Objective

This study aims to suggest using the Odoo Inventory module as a simple and scalable way to improve how small and medium-sized businesses (SMEs) handle their inventory. For many SMEs, inventory is still a big challenge, with common issues like wrong stock numbers, running out of items, or keeping records by hand that take too much time. By bringing in an open-source ERP system like Odoo, the study wants to show how digital tools can make stock more accurate, allow real-time monitoring, and make daily work easier.

The study also looks at how better inventory visibility through Odoo can help managers make smarter decisions. With clearer data, businesses can plan better, lower risks, and keep their operations steady even when resources are limited.

1.2 Scope of Study

In this study, the focus is only on the Inventory module in Odoo ERP. Other modules like Sales, Purchase, or Accounting are not part of the discussion. The idea is to see how the Inventory module can help with common stock problems that many small and medium businesses face, especially those in retail and distribution.

The study looks at simple things such as tracking stock in real time, setting up reorder rules, and managing warehouses. It does not explain how to install or customize the system, because that is too technical. Instead, the goal is to show how this module can make inventory work easier, keep the data more accurate, and support better decisions in daily business.

2 Literature Review

2.1 SMEs and Inventory Challenges

Small and medium businesses (SMEs) often have trouble with inventory. They don't always have good digital tools, and records are sometimes messy or not complete. Many also don't use forecasting systems, so they end up with problems like running out of stock, having too much stock, or sending orders late. This hurts customers and makes the supply chain slower. When data is not clear or updated, planning production also gets harder, and managers cannot always make the right call. Over time, this means higher costs, lower profit, and weaker competition [2].

Most SMEs still use simple ways like Just-In-Time (JIT). They don't really apply methods such as MRP or ABC analysis. Because of this, stock checks are slow, restocking is late, and supply chains are riskier. The reasons are often money limits, not enough trained staff, and also not knowing about digital tools [4]. That's why SMEs need systems that are cheap, easy to use, and fit with daily business.

Warehouses are another big challenge. Without one system to see all the stock, SMEs have trouble finding items, tracking goods, or dealing with broken and old products [5]. This messy situation makes more waste and mistakes. If they use a digital system with real-time updates, SMEs can watch stock movement better, do checks more often, and avoid many of these problems.

2.2 Inventory Management Concepts

Inventory management is basically about how a company controls the way it orders, stores, and uses its products. The hard part is keeping the balance. Too much stock means high holding costs, but too little stock means items aren't available when customers need them. To handle this, businesses usually think about service level, safety stock, and reorder points. Service level shows the chance of meeting customer demand without running out of items, and this often depends on keeping enough safety stock [6].

A big part of this is demand forecasting. If the forecast is wrong, inventory planning will also be off. Methods like RMSE are used to check how accurate the forecast is. Another tool is ABC analysis, which sorts items based on how important they are, so that the most important ones get more attention. Using these techniques helps businesses avoid running out of stock while also not wasting money. Even small companies can see improvements in turnover and efficiency when they try these methods [7].

For many SMEs, even simple automation can make a difference. For example, switching from manual reordering to automatic rules helps avoid stockouts and excess stock because the system can trigger a new order when items go below a certain level. Other tools, like batch tracking or expiry date reminders, are also helpful for products that move fast or expire quickly. A case study in Iraq showed that when an SME used an automated inventory system, it cut storage costs and improved how fast they could fulfill customer orders [8].

2.3 Digitalization's in SMEs

Digitalization is now an important part of helping small and medium businesses (SMEs) stay competitive, especially when the market is unstable and resources are limited. It means using digital tools like cloud systems, ERP software, and data analysis in daily work. These tools can support better decisions, faster reactions, and smoother teamwork inside the company. Many SMEs that start using digital tools report better results and feel more ready to face changes [9].

But going digital is not only about buying new technology. Things like company culture, leadership, and how prepared the employees are also matter a lot. A study from the Spanish food industry showed that SMEs that worked on digital transformation as a whole not just small bits of automation and ended up more resilient and sustainable

in the long run, especially during tough times like pandemics or sudden market changes [10].

Digitalization also helps outside the company, especially in the supply chain. Research shows that SMEs using digital tools can perform much better when they also build strong connections with suppliers and customers. With digital systems, they can see stock more clearly, respond faster, and coordinate better. This kind of integration makes SMEs stronger in unstable markets and helps them compete on a larger scale [11]. They find that digital transformation drives better visibility, faster response times, and more effective coordination with suppliers and customers. This integrated approach enhances resilience in volatile environments and boosts SMEs' competitiveness in a broader market landscape.

2.4 ERP Concepts

Enterprise Resource Planning (ERP) is a system that connects the main parts of a business, such as finance, inventory, production, and sales, into one platform. With ERP, data can be managed in real time so decisions become quicker and more accurate. It is not only a technical tool but also a way to make daily work easier and help departments work together better [12].

For small and medium enterprises (SMEs), ERP seems like a good solution to support operations. However, in practice, using ERP is not always simple. Some problems that often appear are the lack of skilled workers, limited infrastructure, and the difficulty of adjusting the system with the company's existing process. If these issues are not solved, ERP projects in SMEs may not run well or may not give the expected results. Studies also show that selecting the right ERP type and providing enough training are important for success [13].

Lately, cloud-based ERP has become more popular for SMEs. It provides the same features as traditional ERP but does not need heavy infrastructure. This makes it cheaper to start and easier to apply, which is suitable for SMEs with small IT budgets (Salim & Jaffar, 2020). Researchers also note that SMEs can get more flexibility, better teamwork, and helpful data insights when they use cloud ERP with an open approach [14].

2.5 Odoo ERP and Inventory Module

Odoo ERP is now often chosen by businesses as a practical system, especially for handling inventory. The inventory module allows users to see stock levels in real time, create automatic rules for reordering, and connect directly with purchasing and warehouse activities. One study in a manufacturing company showed that using Odoo gave a big improvement in stock accuracy. In fact, the gap between recorded stock and actual stock became much smaller, and in some cases the accuracy was almost 99% [15].

Another case study in a research and development company also showed clear improvements. Before Odoo, they often had problems like manual errors and late stock reports. By using features such as Receipt Product, Internal Transfer, and Inventory

Adjustments, they managed to improve stock data accuracy and cut down on inefficiencies. These tools also gave departments better visibility and made it easier to match physical stock with system records [16].

What makes Odoo even more useful is its modular design. SMEs don't need to adopt everything at once—they can start with inventory and later add sales, purchasing, or accounting if needed. This step-by-step approach works well for small businesses that are not fully ready for digital systems. Studies show that SMEs using modular ERP like Odoo not only get better efficiency but also find it easier for employees to accept the system and adapt during digital changes [2].

3 Method

This research used a qualitative descriptive design to see how the Odoo Inventory module can be applied in small business operations. A case study was carried out in a healthy food distribution SME. This method was chosen because it allowed a closer look at the real problems in inventory management and how Odoo's tools might help to solve them [17].

Data were collected through direct observation, checking company documents, and semi-structured interviews with warehouse staff, system users, and inventory coordinators. These steps made it possible to identify both the functions of the inventory module and the results in practice. The study looked at activities such as checking stock levels, setting rules for reordering, recording product arrivals, and making stock adjustments. By getting information from different roles, the research could show how employees actually use and experience the system in their daily work.

The analysis focused on uncovering repetitive inventory challenges prior to the module's introduction, including errors in manual tracking, delays in updating stock status, and mismatched data records. It further evaluated how Odoo's features responded to those problems, with emphasis on day-to-day warehouse practices and overall operational control. To strengthen result credibility, interview data were triangulated with system-generated outputs and physical stock counts. This process verified that the conclusions represented not only the system's intended functionality but also its contribution to managerial decision-making in real conditions.

4 Result and Discussion

4.1 Common Inventory Challenges Faced by SMEs

A lot of small and medium businesses still handle their inventory by hand. They use Excel sheets or even just notebooks to write things down. It feels simple and cheap at first, but when stock moves in and out all the time it quickly becomes messy. Numbers don't always match, mistakes pile up, and before they know it, they either have too much stock sitting around or nothing left to sell. Both situations make daily work harder and can upset customers when products aren't available [18]. Consequently, businesses

often experience overstocking or stockouts due to poor visibility and inaccurate demand assumptions.

Another big problem is that the inventory work often stands alone. It doesn't connect with sales, purchasing, or finance. Because of that, information gets stuck in silos. Managers end up making decisions based on half the picture or on data that's already old. This makes it harder for teams to talk to each other and harder for the business to react fast when demand changes.

Studies show that businesses without digital links in their system usually struggle more. They risk losing sales, disappointing customers, and hitting a wall when they try to grow [19]. On the flip side, even a small step into digital tools—like automatic reordering or using a basic cloud app—can make a difference. It helps with stock visibility, reduces waste, and makes it easier to keep up with market changes. Slowly, these steps also prepare SMEs for bigger digital upgrades in the future.

4.2 Odoo Inventory Module is a Suitable Solution

For many small businesses, handling stock is still a daily headache. They often rely on simple notes or Excel files, which might work when the company is small but quickly become a problem as orders increase. Mistakes are easy to make, numbers don't always match, and managers end up with too much or too little stock. This not only wastes money but also risks losing customers when products are unavailable.

Odoo ERP with the Inventory module gives a simple way to manage stock. The system is open-source and modular, so a company can start small and add more parts later. This makes Odoo cheaper and easier than many other ERP systems.

The Inventory module records stock changes in real time. When items come in, go out, or move between warehouses, the system updates right away. Managers get alerts when stock is low and can see product levels in different places. Features like barcode scanning and auto reordering also save time and reduce errors.

With Odoo, SMEs do not need to use spreadsheets or handwritten notes. All data is in one system and connected with sales and purchasing. This helps information flow better, reduces mistakes, and supports managers in making clear decisions. Fig. 1 shows the Inventory Dashboard, which gives a simple view of stock levels and product movement.

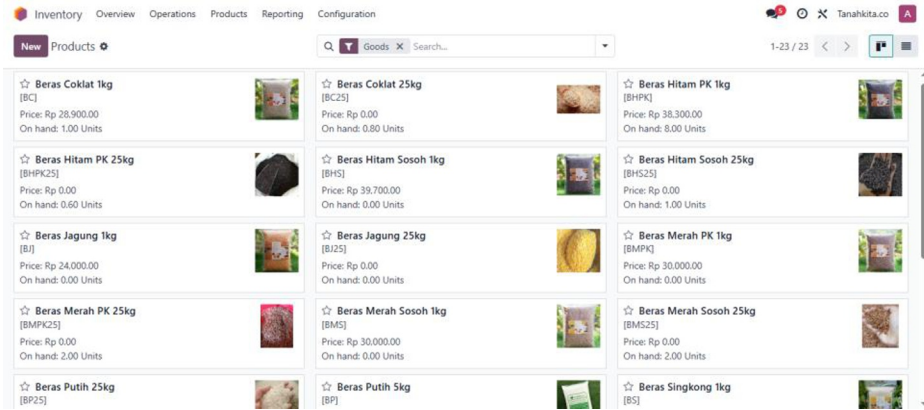


Fig. 1. Inventory Module Dashboard in Odoo ERP.

The figure shows the main page of the Odoo Inventory module. On this page, users can find Receipts, Deliveries, Internal Transfers, and Inventory Adjustments in one place. The design is simple and easy to understand, so even staff with little technical skill can use it without much trouble.

The system updates stock data instantly, so everyone sees the latest numbers. Access can also be adjusted based on roles. This way, managers, warehouse staff, and admins only work with what matters to them. For small and medium businesses, the dashboard shortens training time, reduces mistakes in daily work, and helps keep routines steady. Over time, it supports better control of stock and smoother business operations.

4.3 Strategic Benefits for SMEs Adopting Odoo

First, Odoo is cost-friendly because it's open-source. Businesses don't need to pay high license fees, and they can start with only the features they need. As the business grows, more functions can be added step by step, so there's no big cost at the beginning.

Second, Odoo helps managers make better decisions. Since stock levels, transaction history, and warehouse activities are shown in real time, businesses can avoid having too much or too little stock. This also makes it easier to connect inventory with sales and purchasing, so data flows smoothly without repeating manual entries. It reduces mistakes and gives clearer information for planning [16].

Third, the system makes processes more organized and transparent. Stock movements are recorded digitally, and access can be set based on roles. This builds accountability among staff and removes the heavy reliance on spreadsheets, which often cause errors. Because the system is easy to use, employees don't need long training to get started.

Lastly, Odoo helps businesses stay strong in the long run. With a single platform to manage stock, SMEs can react faster to changes in demand, grow more steadily, and compete better in a busy market. To show this more clearly, Table 1 lists some common stock problems that SMEs face and how Odoo's Inventory module can help solve them.

Table 1. Inventory Issues and Improvement Opportunities with Odoo for SMEs.

Current Challenge in SMEs	Potential Improvement with Odoo Inventory
Stock data is often inaccurate or out-dated	Real-time stock updates and automated tracking
Stockouts and overstocking due to poor forecasting	Reordering rules and minimum-maximum quantity alerts
Manual recording across departments	Integrated system with automatic data synchronization
Difficulties in identifying fast- and slow-moving items	Product movement analysis and inventory valuation tools
Inventory reporting is slow and error-prone	Instant system-generated reports with standardized format
Poor visibility across warehouses or locations	Multi-location tracking and centralized inventory control
High dependency on key individuals	Role-based access and process automation reduce human bottlenecks
Low responsiveness in procurement decisions	Replenishment suggestions based on real-time stock level

From the comparison, it's clear that Odoo does more than just fix technical issues. It helps small businesses get more prepared, keep better data, and make smarter choices as they grow.

Since Odoo is modular, companies don't need to use the whole system right away. They can begin with the Inventory module and add other parts like Sales, Purchase, or Accounting later. This way, the system stays affordable, less risky, and easy to adjust to what the business really needs.

4.4 Feasibility and Adaptability for Local SMEs

For many small and medium-sized businesses, ERP systems can feel like too much—too expensive, too complicated, and too risky when money and people are limited. Odoo gives a more down-to-earth option. Since it's open-source, companies can decide whether to use it in the cloud, which helps those without strong IT support, or install it on their own servers if they want more control. This makes it easier for businesses at any stage of going digital to give it a try [20].

Another big plus is how flexible Odoo is. Because the code is open, SMEs can work with local consultants to adjust the system to their daily needs, instead of changing the way their team works to fit the software. This also helps save money compared to big ERP providers that ask for expensive licenses and long contracts. On top of that, the interface is simple, visual, and even has Indonesian language support, so employees don't need to be tech experts to use it.

All of this makes Odoo a good choice for SMEs that want to improve inventory management. It reduces mistakes, gives better visibility across operations, and supports steady growth. With its mix of flexibility, lower costs, and local relevance, Odoo gives businesses a strong base to compete in today's fast-moving market.

5 Conclusion

To sum up, this article talks about how inventory is often a hard part for small and medium businesses. At first, they can use manual notes or simple files, but after some time it usually causes mistakes and makes decisions slower. Odoo Inventory gives another way that is easier to use and not too complicated.

With tools like real-time stock updates, auto reordering, and clear reports, daily work can run smoother. The system is also flexible and not too expensive, so SMEs can use it step by step and fit it with how they already work. In the end, Odoo Inventory is not only for fixing stock problems, but also to help small businesses feel more ready to grow and take part in the digital era.

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