A RETAIL FURNITURE TRADER'S INVENTORY SYSTEM

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ABSTRACT

An important factor any business is to manage its inventory. The family business, TJF, which is the focus of this research, has no systematic inventory recording system, yet this is a home furniture dealer whose main investment and activities are related to inventory. TJF's old manual inventory record itemised only current product quantities and never collected historical data. The research to design an appropriate new system began with document reviews of the old stock records, plus interviews with owners and workers. The oldest data was only one year old and some had been lost or not collected. A physical stock count was therefore made to create accurate records. Codes for each item were created, to reduce errors from picking the wrong products and to make it easier to remember products. A daily stock movement record was designed, to be used with new computerized stock records. With this record system, the firm now has ready access to accurate details of its total inventory and costs.

บทคัดย่อ

ปัจจัยสำคัญของธุรกิจคือ การจัดการสินค้าคงคลัง งานวิจัยนี้เกี่ยวข้องกับธุรกิจครอบครัวชื่อ TJF ตัวแทนจำหน่ายเฟอร์นิเจอร์ ซึ่งยังไม่มีการเก็บข้อมูลสินค้าคงคลังอย่างเป็นระบบ ทั้งนี้การลงทุนและกิจกรรมส่วนใหญ่จะเกี่ยวข้องกับการจัดการสินค้าคงคลัง โดยแต่เดิมการบันทึกรายการสินค้าของ TJF ใช้บันทึกเฉพาะปริมาณสินค้าปัจจุบันลงในสมุด และไม่เคยเก็บข้อมูลเก่าๆ ก่อนหน้านี้ไว้ งานวิจัยนี้จัดทำขึ้นเพื่อออกแบบระบบใหม่ที่เหมาะสม โดยใช้วิธีตรวจสอบเอกสารที่เป็นบันทึกสินค้าคงคลัง มีการสัมภาษณ์เจ้าของกิจการและพนักงาน ข้อมูลเก่าที่สุดที่มีคือ 1 ปีที่แล้ว แต่ข้อมูลบางส่วนหายไปหรือไม่ได้จัดเก็บไว้ ดังนั้นจึงทำการนับสินค้าเพื่อสร้างระบบบันทึกที่มีความถูกต้อง แม่นยำ มีการสร้างรหัสสินค้า เพื่อลดความผิดพลาดในการหยิบสินค้า และเพื่อให้ง่ายต่อการจดจำสินค้า มีการออกแบบบันทึกสินค้าเข้าออกในแต่ละวัน เพื่อใช้กับระบบบันทึกสินค้าคงคลังในเครื่องคอมพิวเตอร์ และด้วยระบบนี้ ทำให้ธุรกิจมีรายละเอียดของข้อมูลการบันทึกสินค้าและต้นทุนที่ถูกต้องแม่นยำ

INTRODUCTION

Many businesses rely on inventory to maintain their customer response service level. With fierce competition, inventory is a major concern that may threaten survival. The furniture business has high uncertainty in demand and lead time: it is one of the most highly competitive businesses for both manufacturers and retailers. Kwok (2012) explained that the

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furniture businesses in Thailand had rapid growth, especially in 2011-2012 after severe floods as people bought to restore their homes.

TJF is a small business, founded in 1977, a retailer of home furniture such as beds, chairs, tables, wardrobes, bookcases, and mattresses. Its major customers are households and condominium owners. It has two branches in Bangkok, but its major income comes from Furniture Fairs that are arranged sixteen times a year at convention centers. The firm has twenty-three employees: deliverers, warehousemen and salespersons. It has a four-floor warehouse and 160 product types. Normally, customers order products and, pay a deposit; then the products are delivered to customers (who pay the balance). Customers do not get products immediately after they buy, and may want them delivered six months later when a condominium is almost ready for occupation. The competitors are department stores and other local furniture shops, but this firm can price its goods lower.

TJF does not have a proper stock record system, but relies on past experience. When the owner decides to order products, he considers the number of products left in the stock record, information from manufacturers and customers, and promotions by manufacturers. TJF does not have a proper inventory record or sales forecasts. It uses a manual inventory recording system.

There are many inventory problems. Errors occur because of inaccuracy or lost documents. The paper system is not up-to-date and is mostly inaccurate. It records only customer orders and sales. Mistakes could be costly, in lost orders and/or customers.

TJF does not specify periods for counting stock and checking inventory accuracy. It only counts products when they enter or leave the warehouse. Nobody knows the exact amount of products on hand and how much the inventory is worth. This leads to ordering unwanted and out-of-stock products. This research aims to improve the inventory record process and reduce problems through applying a new system.

RELEVANT LITERATURE

Nature of Inventory

Inventory is so vital to a business, and has been explored in its many aspects and dimensions (Buxey, 2006). Inventory is a necessity, but the quantity and cost are very important (Ballou, 1998). Excess inventory helps companies avoid lost sales, yet absorbs money that could be used for other purposes. Reasons why companies do this are described by Muller (2011):

a) Economies of Scale. The more that companies buy products, the lower the price of purchasing, transportation and manufacturing.

b) Uncertainty of Supply. Some suppliers may deliver late or low quality. Companies hold more inventory to mitigate these risks.

c) Uncontrollable Demand. Because of high seasons, natural disasters and political problems, firms keep inventory on hand to be readily available to customers.

Small retail firms purchase and sell products which others have made. They have to know their inventory levels to be able to satisfy customers when demand arises. This makes stock recording important. This is inventory materials management (Tersine, 1994).

Stock Records

Inventory stock records can be in hard copy or electronic, containing information about products on hand: quantity, unit price, location, receipts, issues and balance. Inventory records act as a physical check whenever companies want to know their inventory levels (Brooks & Wilson, 2007). As Sebastian (2011) puts it: recording information includes can include code, production date, delivery date, status, location, name, weight, quantity and movement.

According to Jessop and Morrison (1994), stock recording can be classified into two methods. A *Manual recording system* whereby the clerk notes product information in papers or books, about receiving, picking and checking. Many small businesses use this if they lack computer-skilled workers. A *Computerized system* is where the clerks input item information into a computer or other electronic device to catalog records. Electronic devices include barcode, tape, magnetic disc, electronic data interchange (EDI), and radio frequency identification (RFID).

Jessop and Morrison (1994) explained the importance of stock records:

a) Shortening Response Time. To know the quantity of products on hand without the need for clerks to count it themselves. This helps to increase a customers' impression of the company because salespeople can answer customers immediately.

b) Synchronization between Stock Records and Accounts. Company accounts and stock records have a close relationship.

c) Strategic Purpose. Companies know the best-selling and slow-moving products, and can decide to make clearance sales and sales forecasts.

Brinkman and Roubieu (2001) recommended two advantages of having effective stock records. First, stock records can be used to identify problems such as theft, overstock, out of stock and dead stock. An imbalance between a physical count and stock records can be costly. Second, stock records that include unit price, name of suppliers and purchase information can be used in reordering processes and negotiations with suppliers. It can also calculate and explain company assets. To reduce human error risk in manual stock records, stock counts are vital.

Stock Count

A physical stock count is checking the quantity of products in the warehouse, to reconcile with inventory records (Stanford University, 2007). Firms need to know their product levels to identify items in shortage or overstock related to customer demand. Stock record errors can be verified by physical stock counts. Jessop and Morrison (1994) stated the reasons:

a) Maintain Stock Accuracy. Accurate stock records are vital, to identify inventory levels. If stock record numbers do not match actual inventory, a firm could order more or less products than actually needed. Unreliable stock records can lower customer service levels, because of out of stock, damaged, and dead stock.

b) Disclose Hidden Problems. A count can uncover problems hiding in a warehouse such as product loss, theft, damage, dead stock, product shortage, excessive inventory, improper inventory policy and faulty inventory control system. These problems can be costly and ruin a company's image.

Wilson (1995) also supports stock counts:
Record Accuracy Level. Stock counts enable a company to evaluate whether its record accuracy is statistically valid. If a company sets a target level of accuracy, it can use stock counts to help to verify accuracy, and identify which transactions should be improved.

It is important for firms to know how to count stock. Young (2010) has two methods.

a) Continuous Checking. A firm chooses some products to be counted regularly by cycle counters, especially fast-moving products. With this method there is no need to close the warehouse during counting.

b) Periodic Checking. Companies make a schedule of when to check all stock at a specific period, usually monthly, quarterly, annually or twice a year. This is laborious and slow, made lengthier as problems are revealed. In this method the warehouse must be closed.

Item Identification

Products need to be described, for staff to be able to identify and pick correctly. Some products have shapes and names and long descriptions which enable product differentiation. Small businesses may carry from 100 to 1,000 products. Carter and Price (1993) stated the importance of using product codes:

a) Plainness. Lengthy descriptions of products take time to read and may cause confusion. Codes save time and make staff remember products easier.

b) Improved Picking Process. Some items can have the same name but different characteristics such as size, color, source, and number. Codes will reduce errors in identifying and issuing products.

c) Supporting Computerized System. Computers use key words or abbreviations instead of full descriptions to support finding processes, which make it easier for computers to understand. Coding improves computer operations.

Rao (2008) stated that inventory coding needs a standardization process. When companies combine similar products into groups, then giving products codes will make it easier to read, and reveal whether the list of products is too detailed.

There is no perfect method that can be applied to every business and situation. TJF Company needs to improve its inventory record system to suit its own operation. Setting standards and gathering needed information by using physical inventory and computerized stock records are the first steps. Implementation of product codes will also help to improve and maintain TJF's inventory record performance. The accuracy of inventory information and speed to deliver products are very important for this furniture business.

RESEARCH METHODOLOGY

The steps in this research are to: identify the As-Is process; design a To-Be stock record format; make a To-Be physical count; and create To-Be item codes. Data on the current situation at TJF was collected from document reviews and interviews. Data from the original stock record books for October 2013 were used (the latest version available). Data in the stock records consisted of product quantity, name, and type. The unit price of each product was extracted from the invoices of suppliers, containing product names, unit prices, manufacturers' names and delivery dates.

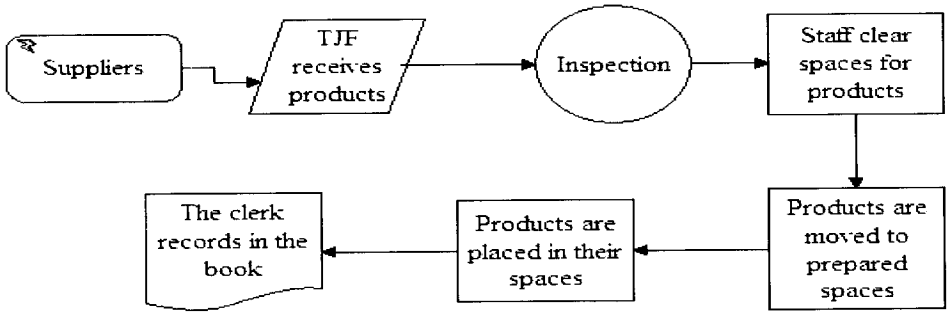
Interviews

Semi-structured interviews were conducted with owners and workers at TJF to verify current inventory control processes and problems, and to seek their ideas on the old system, needed improvements, and what they expected the new system to be like. The interview contained eight open-ended questions to ask the two owners and three senior workers who had operated inventory operations for more than two years (one had worked for more than ten years and had managed the stock records system. The two owners had run TJF for more than fifteen years, and had the authority to decide any changes.

As-Is Process

Companies cannot choose strategies unless they have accurate records. Normally, TJF would count products only when they arrived at the warehouse, so the overall numbers were unknown. TJF's warehouse has four floors. The following two Figures show TJF's business processes.

Figure 1: Current Receiving and Putting Away Processes

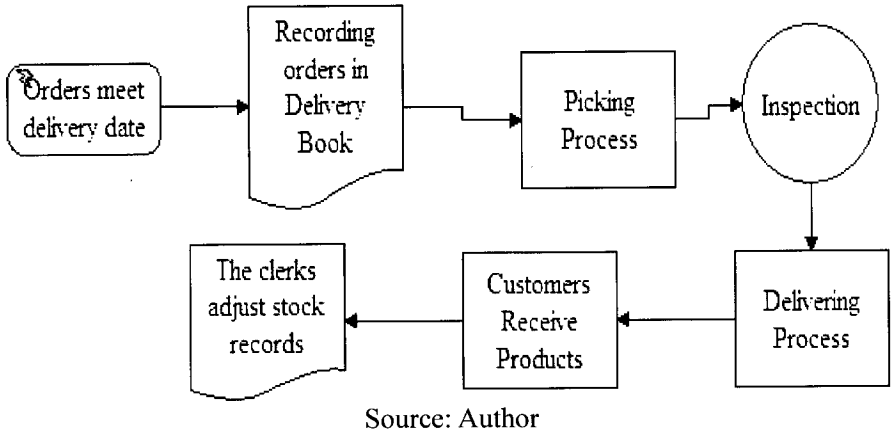


Source: Author

Receiving and Putting Away Processes

When products arrived at the warehouse, workers counted the quantity and checked for defects. Then they cleared space for storing these products, and moved them to their places on the appropriate floor. The checkers signed the invoices and gave them to the deliverers. The checkers then adjusted the stock records.

Figure 2: Current Picking and Delivering Processes



Source: Author

Picking and Delivering Processes

When customers bought products, salespeople created paper orders and agreed on delivery dates with customers. If a customer specified a delivery date, the staff would write the order I.D. number, list of products, price, and customer's telephones number inside the delivery book one day before the delivery date. In the picking process, the staff would prepare product lists and go to pick the products. They would gather all items at the dock in front of the trucks. The checkers would check the quantity of delivered items; they could not check the quality of all products at this point because it was time consuming when a lot of products had to be delivered. The workers would check products only when they would be delivered to customers or when a product seemed worn-out. Deliverers would inform customers one hour before they reached their destination. At the end of the day, the checkers would adjust the stock records.

To-Be Stock Record Format

Every day, products move in and out of the warehouse. Some were moved for display at Furniture Fairs. These products were not sold yet and it was possible that the owners might order retrieval of some products back to the warehouse. Records are needed to keep daily track of product movements. These records would work together with stock records to generate accurate inventory records. The format of stock movement records is shown in Table 1.

Table 1: Format for a Daily Stock Movement Record

Daily Stock Movement Record Recorded by_____								
No.	**Code**	**Items' Description**	**Total Quantity (Units)**	**Date**	**In**	**Out**	**Balance (Units)**	**Remarks**
1	B4314	Kington Bed Single-Size Max	4	1/2/2014		1	3	Reorder
2	M1634	Dunlopillo Paradise Single-Size	7	1/2/2014		1	6	
3	M1712	Dunlopillo Perfume King-Size	16	1/2/2014		1	15	
4	M5234	Swissmatt Evergreen Single-Size*6	1	1/2/2014	4		5	

Source: Author

All transactions related to the movement of products in and out would be recorded every day using this sheet. The responsible checker would adjust this sheet at the end of the day after all work was finished and before he adjusted the stock records. Daily stock movement records were designed to show how many products moved in and out each day and to prevent confusion from changing the quantity of products in inventory records every day.

The checker would input information into stock records using the Microsoft Excel program, which was already familiar to him. Other technologies were expensive, required high skilled workers, and were not appropriate to the firm's products. Microsoft Excel is sufficient for a small business. The data that TJF planned to input into inventory records was product names, codes, sequence numbers, quantity, unit costs and remarks. A sample format of an inventory record is below.

Table 2: Format for an Inventory Record for Beds

Stock Record of Bed Recorded by _____ on _____						
No.	**Code**	**Items' Description**	**Quantity (Bed)**	**Cost/Unit (Baht)**	**Total Cost (Baht)**	**Remarks**
1	B1111	Contessa King-Size Max	3	13,500	40,500	Reorder
2	B1121	Contessa King-Size White	2	13,500	27,000	Reorder
3	B1211	Contessa Queen-Size Max	1	13,000	13,000	Reorder
4	B1221	Contessa Queen-Size White	1	13,000	13,000	Reorder

Source: Author

The inventory records would be adjusted and saved in the computer, daily. At the end of the month they would be reported to the owners or whenever the owners wanted. The checker would be designated to adjust stock records, daily, while also retaining previous data. To prevent inaccuracy, physical count process must be performed, to let TJF know how many products it had on hand.

To-Be Physical Count Process

This part covered necessary preparation, the format of check sheets and physical count methods to be used. Stanford University (2007), described the preparation for physical counting:

a) Plan a Timetable for Physical Counting of Inventory. The owners wanted this physical count to be completed within two days, as a standard. TJF planned to start this first ever physical count when it did not have any "Furniture Fairs" and had few customer orders and transactions. This was at the end of October, 2013. Thereafter, the physical stock count would be done twice a year.

b) Inform Involved People. The owners must inform their employees of the schedule and find out if they are available. TJF had seven to eight male workers who worked as deliverers, so if there were few customer orders they could arrange for five or six workers, who knew the products very well, to count inventory. They also had to inform suppliers who planned to deliver their products during physical count periods to warn them not to deliver at these times.

c) Specify Duties and Responsibilities. The owners selected the checker and counting teams who could be trusted. This was very important because if the checker misled the owners about product quantities it would be costly.

d) Prepare Physical Count Sheet and Warehouse. The day before a count, TJF had ordered workers to tidy the warehouse. Obstacles in the aisles must be cleared and all products arranged in their designated places. Physical count sheets had to be prepared beforehand.

e) Clearly Specify the Counting Sequence. All product inventories inside the warehouse would be counted. TJF planned the sequence of floors. Damaged products and those that had lost components would not be included.

The formats of check sheets used for the count were prepared using Microsoft Excel. The designated responsible checker, was the leader of the physical count team. TJF planned to count all inventory twice a year; more frequently would not be possible in a small firm.

Table 3: The Format of Check Sheet for Furniture

Check Sheet between _____
Checked by _____

(Use pencil to write "|" sign as one counted)

No.	Items' Description	Number of Furniture (Units) as counted	Total Quantity (Units)	Locations	Remarks
1	Office Desk Meple 1.50 metres Max	||	2	1st Floor	Reorder
2	4 Drawer Office Desk Max	|||| ||||	9	1st Floor	
3	4 Drawer Office Desk White	||	2	1st Floor	Reorder
4	Office Desk Maxwell Max	|||| ||||	8	1st Floor	

Source: Author

The check sheets were of three major types according to the nature of products.

a) Mattress. This sheet contained the list of all mattresses of TJF, including king-sized, queen-sized and single-sized. The unit for counting a mattress was "Mattress".

b) Furniture. This sheet included all kinds of wood furniture except beds. TJF's furniture had two colors called "max or brown" and "white". This sheet contained many types of furniture, so TJF would set all furniture's unit to be "Unit".

c) Beds could be divided into three sizes like mattresses, but some beds would have two colors. The unit for bed was "Bed".

To start counting, the workers would tell the checker about a product's name, size and quantity while the checker used a pencil to sign "|" when the workers counted one product in the "Number of Mattresses as counted" column. After they made sure they had finished counting all these products, they would complete the "Total Quantity" column. In the "Remarks" column, the checker would make a note about damage or re-ordering need. TJF had to separate the "Number of Mattresses as counted" column from the "Total Quantity" column because most products were heavy and large and required a lot of space. If there were any products not listed in the physical count sheet the checker could note them in the list and inform the owners later. Check sheets could be simultaneously used with stock records to verify the quantity and movement of products.

To-Be Item Codes

In the old system, all TJF workers called products by their names, and some had the same name but were different in type. This caused confusion when a lot of customer orders arrived. Product codes not only helped dispel this confusion but also classified and arranged each product in their categories. TJF would use alpha-numerical coding, a combination of letters and digits, to code its products. Table 4 shows samples of the meaning of the codes.

Table 4: Meaning of Codes for Product Types

Type	Code
Bed	B
Cabinet	C
Chair	CH
Glass	G
Mattress	M
Stool	S
Table	T
Wardrobe	W

Source: Author

Codes numbers are then assigned to each brand of each product; and for the different models, sizes, and colours; and for each floor location. Table 5 shows examples.

Table 5: Some Product Codes

1st Letter	1st Digit	2nd Digit	3rd Digit	4th Digit
Type	Brand	Series	Size	Floor
M	1	1	1	2

Mattresses have only one color, so that code is omitted. The full code for this particular mattress is M1112 (mattress, Dunlopillo, Amore, king-size, 2nd floor.

1st Letter	1st Digit	2nd Digit	3rd Digit
Type	Series	Color	Floor
C	1	1	1

Furniture has no brands or sizes. The code for this item is C111. It is cabinet, 4 drawers, Biton, white, 1st floor.

1st Letter	1st Digit	2nd Digit	3rd Digit	4th Digit
Type	Series	Size	Color	Floor
B	1	1	1	1

TJF does not use bed brands. The code for this item is B1111. It is a bed, Contessa, king-size, white, located on the 1st floor.

Each product would be clearly labeled with its code. These steps would be the first to begin to run a proper inventory record system.

PRESENTATION AND CRITICAL DISCUSSION OF RESULTS

Interview Findings

In the interviews, owners and workers could not tell the exact quantity of products on hand nor how many SKUs TJF had. One guess was 1,000 units of products. A chief worker said that the firm had never had a physical count for all its products, and only counted products on arrival or departure. Many workers did not have time to make physical counts. Another worker said that the stock records had low reliability; often when workers went to pick

products they could not be found, and the real quantities of products did not match stock records.

Inventory control problems mentioned included workers needing to check products by themselves almost every time, and not finding products, as locations were not noted in the stock records. Everyone said that inventory accuracy was very important, as the availability of goods affected the firm's survival. Accuracy would help to reduce inventory costs as TJF could order less if the real quantities on hand were known. All wanted more accurate stock records and a physical count every three months, plus historical product movement data which could be used for forecasting.

Implementation of the New Computerized Stock Record

The old record system made it difficult to estimate the total inventory cost, to adjust stock records, and to know the total quantity of inventory because of unreliable stock records in the absence of systematic physical stock counts. A daily stock movement record was designed to help ease the difficulty of adjusting stock records. Table 6 shows a sample from two weeks in February 2014.

The "No." column shows the sequence number of the product's position in the sheet. The "Code" column displays item codes for each product. Products without item codes means they are dead stock or could still be sold but would be ordered in small numbers only when customers wanted them. Products that were obsolete, not produced anymore, or not bought anymore were also not given codes. The "Items' Description" column shows products names or details. The "Total Quantity" column shows the total number of that product on hand before any transactions. The "Date" column shows the date when products have movements. The "In" column shows when products were added into the warehouse, and the "Out" column when products were moved out. The "Balance" column displays the product quantity remaining after calculations. The "Remarks" column is used by the checker: "Reorder" means a low inventory level needing more orders; "Dead Stock" means no recent movement, because of obsolescence, severe damage or simply unsellable; "Make-To-Order" means made only when specifically ordered.

The daily stock movement record in Table 6 would help remind checkers and owners of product movements. The checker could concentrate on products that had transactions that day. Checkers would know how many products remained and which should be ordered, and that knowledge would be useful when forecasting demand.

New computerized inventory records were also developed to make them easier to read and add more details such as product codes, item's description, and unit costs. Table 7 shows a sample using data from a day in February 2014.

Table 6: Sample of Daily Stock Movement Record

Daily Stock Movement Record Recorded by Nuttawat								
No.	**Code**	**Items' Description**	**Total Quantity (Units)**	**Date**	**In**	**Out**	**Balance (Units)**	**Remarks**
1	B4314	Kington Bed Single-Size Max	4	1/2/2014		1	3	
2	M1634	Dunlopillo Paradise Single-Size	7	1/2/2014		1	6	
3	M1712	Dunlopillo Perfume King-Size	16	1/2/2014		1	15	
4	M5234	Swissmatt Evergreen Single-Size*6	1	1/2/2014	4		5	
5	M5613	Swissmatt Sleep Care King-Size	24	1/2/2014		1	23	
6	M11134	Dunlopillo Utopia Single-Size	5	1/2/2014		1	4	
7		Swissmatt Sleep Care King-Size*10	1	1/2/2014		1	0	Make-to-Order
8	M2234	Homematt Paradise Single-Size	2	2/2/2014		1	1	Reorder
9	B12111	Stephan Bed King-Size Max	4	3/2/2014		1	3	
10	B14311	Twin Bed Single-Size Max	12	3/2/2014		1	11	
11	C211	3 Drawers Cabinet Contessa Max	1	3/2/2014		1	0	Reorder
12	C1111	Bedroom Cabinet Morocco Max	10	3/2/2014		1	9	
.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
68	W411	2 Doors Wardrobe Vanessa Max	5	15/2/2014		1	4	

Source: Author

Table 7: Sample of Inventory Record of Furniture

Stock Record of Furniture Recorded by Nuttawat on February 16, 2014						
No.	**Code**	**Items' Description**	**Quantity (Unit)**	**Cost/Unit (Baht)**	**Total Cost (Baht)**	**Remarks**
1	C111	4 Drawers Cabinet Biton Max	4	5,000	20,000	
2	C211	3 Drawers Cabinet Contessa Max	0	8,900	0	Reorder
3	C311	4 Drawers Cabinet Contessa Max	5	9,500	47,500	
4	C411	6 Drawers Cabinet Contessa Max	9	9,900	89,100	
5	C511	3 Drawers Cabinet Morocco Max	7	7,000	49,000	
6	C611	5 Drawers Cabinet Morocco Max	2	8,000	16,000	Reorder
7	C711	2 Drawers Cabinet Neo Classic Max	4	7,800	31,200	
8	C811	4 Drawers Cabinet Neo Classic Max	7	7,300	51,100	
9	C911	4 Drawers Cabinet New England Max	0	7,900	0	Reorder
10	C1011	Bedroom Cabinet Contessa Max	12	3,500	42,000	
11	C1021	Bedroom Cabinet Contessa White	10	3,500	35,000	
12	C1111	Bedroom Cabinet Morocco Max	9	3,500	31,500	
.	.	.	.	.	.	.
60		Office Desk Maxwell Max	7	4,890	34,230	Dead Stock
		Total	**393**		**2,000,270**	

Source: Author

Stock records help workers to find product information a lot easier. These were developed from the physical stock count in October 2013, then adjusted on a daily basis. All figures were updated. The unit prices of all products came from manufacturers' invoices. They identified dead stock and which required replenishment. The item codes helped to decrease time required for finding products. It also reduced errors from picking the wrong products that had similar names. The owners could use these stock records as price lists when they had meetings with manufacturers, and found it easier to check the quantity of inventory without contacting checkers. With these new computerized stock records the inventory cost could be estimated. These records could be used as data when forecasting. Table 8 shows the summary of inventory as of February 16, 2014.

Table 8: Summary of Inventory as of February 16, 2014

Types	**Number of SKUs**	**Quantity (Units)**	**Cost (Baht)**	**Dead Stock (SKUs)**	**Dead Stock Quantity (Units)**	**Cost (Baht)**
Mattress	147	801	6,713,040	47	97	600,140
Bed	63	368	2,858,690	5	15	87,400
Cabinet	28	182	1,165,100	0	0	0
Table	12	75	374,930	2	12	59,230
Wardrobe	8	14	268,500	0	0	0
Chair	5	82	127,380	0	0	0
Glass	4	20	37,910	0	0	0
Stool	3	20	26,450	0	0	0
Total	270	1562	11,572,000	54	124	746,770

Source: Author

Implementation of Item Codes

Item codes which were developed to differentiate one product from another and used for the stock record system. This is an example, for mattresses, which includes type, brand, model, size, color, and location:

Table 9: Sample of Codes (Mattress)

No.	Code	Dunlopillo
1	M1112	Dunlopillo Amore King-Size
2	M1122	Dunlopillo Amore Queen-Size
3	M1134	Dunlopillo Amore Single-Size
4	M1212	Dunlopillo Ecstasy King-Size
5	M1222	Dunlopillo Ecstasy Queen-Size
6	M1234	Dunlopillo Ecstasy Single-Size
7	M1312	Dunlopillo Granduer King-Size
8	M1322	Dunlopillo Granduer Queen-Size
9	M1334	Dunlopillo Granduer Single-Size
10	M1412	Dunlopillo Heritage King-Size
11	M1422	Dunlopillo Heritage Queen-Size
12	M1434	Dunlopillo Heritage Single-Size

Source: Author

To apply the codes, each product would be labeled with its code, at clearly visible positions, and on the board in front of the warehouse door. Workers would be encouraged to memorize the codes.

CONCLUSIONS

This research produced a solution to the inventory record problems by creating a daily stock movement record, new stock records, physical count check sheets and item codes. The firm's owners now know how many products they have on hand. Item codes were also developed and helped to reduce errors from picking the wrong products as well as the complexity of using too many details. In addition, daily stock movement records helped TJF to monitor product movements. It was found that TJF had 270 product SKUs with a total inventory cost of 11,572,000 Baht (US$400,000). 54 SKUs that were dead stock with a total cost of 746,770 Baht (US$25,000).

This research helped TJF to set inventory record standards to differentiate every SKU, plus periodic physical counts to ensure accuracy, reliability and cost. Salespeople can now quickly answer customers' questions about product availability. The owners can now rely on their stock records. When comparing the new stock records with the previous ones, many product names did not appear in the previous stock records, or their inventory quantities were not exactly the same. This was further proof that the old system had low accuracy and reliability. The owners now know which products need to be ordered urgently, which are dead stock, and which are damaged. The improvements save a lot of money and increase working speed. The level of customer service has increased. It would now be easier to make task schedules and plans.

Regarding theoretical implications, a new periodic counting method recommended by Young (2010) was implemented. TJF spent two days in October 2013 conducting its first ever physical count of all of its inventories. TJF decided that thereafter they would use the periodic counting method twice a year. This research also demonstrates the implementation of stock records as mentioned by Jessop and Morrison (1994). For strategic purposes, stock records now help TJF to know how many products it has and how much money is invested in inventory.

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