INVENTORY MANAGEMENT IN BARS AND RESTAURANTS – EMPLOYEES’ ATTITUDES

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Abstract
Purpose – Relative to manufacturing companies, service companies have a faster service production process and most goods are procured in smaller quantities and more often to avoid the expiration of stocked goods and minimise stock-keeping costs. The paper’s purpose is to determine whether bars and restaurants businesses recognise the importance of inventory management, examine what planning and control mechanisms they use, and learn how satisfied they are with the ordering process and delivery times.

Methodology – To understand how the importance of inventory management in bars and restaurants businesses is perceived, primary qualitative research was conducted using a structured questionnaire on a sample of 60 establishments within the Rijeka region. Employees (self-employed or employed individuals working directly in service) were surveyed in field interviews from March to June 2019.

Findings – Research results indicate that employees in bars and restaurants judge the goods ordering and delivery process as being highly efficient; on average goods are ordered once a week and delivery times amount to one week. Employees display a high awareness of the importance of inventory planning and continuously monitoring inventory levels, but still fail to use computer software to any significant extent to monitor stock levels.

Contribution – The paper’s contribution is the systematisation of knowledge in the field of inventory management, a precondition to the successful performance of any service company. The paper’s contribution to practice is evident from the empirical research, carried out on bars and restaurants that are characterised by a rapid stock turnover process, where research findings can help them to improve inventory planning and control mechanisms.

Keywords Inventory Management, Inventory Planning, Inventory Control, Bars and Restaurants

INTRODUCTION

One of the major tasks of operations planning in hospitality establishments involves procurement and inventory planning, which requires an understanding of procurement and logistics processes, the development of supplier relationships, the monitoring of cost procurement activities, and inventory management. From the perspective of inventory management, a hospitality establishment’s performance is determined by its ability to maintain stock at a level that ensures the normal course of service production processes, while incurring the least procurement and stock-keeping costs.

Inventory constitutes a so-called buffer zone. Holding stock enables the uninterrupted flow of sub-processes in production until specific problems in the business process are resolved, as for example the inability to procure certain materials over a longer period. Large inventories represent a large material asset for a company. The objective of a
business, however, is not to hold huge inventories but rather to keep inventories of a size that will allow the production process to function continuously.

The size of a company’s inventory depends on a variety of factors. Among the main factors are the volume of production, market conditions, ordering frequency and the characteristics of the stored goods. The company monitors the current prices of the materials and goods it wants to procure and store. Two of the most common approaches to ordering goods and materials are to procure smaller quantities of materials and goods repeatedly or, more rarely, to procure a large quantity of materials and goods with a single order. Inventory control is implemented in modern business operations to prevent stock from being too high or too low. Stocks that are too low can cause interruptions in the service production process, create customer dissatisfaction and result in the loss of potential sales. Too high stocks, on the other hand, can result in high stock-keeping costs and reduced stock turnover, ultimately leading to lower profits. Inventory control involves implementing systems for tracking the flow of inventory through a company. Tracking inventory flows makes it possible for a company to forecast future demand more accurately and to better estimate the duration of production cycles and procurement cycles. Information gathered by calculating inventory holding costs, inventory procurement costs and warehousing costs facilitates the planning process for future business periods.

Relative to manufacturing companies, hospitality service companies (e.g. bars and restaurants) have a faster service production process and procure most goods in smaller quantities and more often to avoid expired inventory and to minimize inventory costs. As most of the inventory in hospitality companies is tied to the provision of food and beverage services, the service production process can only begin in the presence of guests and their orders, meaning that there is practically no make-to-stock production.

The purpose of the paper is to determine the attitudes of employees in bars and restaurants concerning inventory planning, inventory control and supplier relationships. The paper explores whether employees recognize the importance of inventory management, what planning and control mechanisms they use, and how satisfied they are with the ordering process and supplier lead times (delivery times).

OVERVIEW OF PREVIOUS STUDIES

The role of inventory management is to maintain a desired stock level of specific products or items as a function of customer service requirements and the cost of inventory investment. (Toomey, 1993).

Although inventory is a major component of business management, studies show that for the most part only large hotel systems manage inventory in a continuous and professional manner while in smaller companies it is managed sporadically and usually by persons who are not trained for the job (Shukla, 2018). Differences in inventory management also exist regarding the size of the market in which a company is operating, that is, whether it is operating only in the domestic market or in the international market as well. Results suggest that domestic companies lack knowledge about inventory management
and are less coordinated in the inventory management process while multinational companies, with foreign investments and access to sophisticated technology, are very knowledgeable of the concept of inventory management (Ruteri, 2009). Large service companies, as a rule, have standard inventory management procedures, while procedures for small companies usually do not exist. (Yadav, 2018).

Regardless of a company’s size or orientation, if it is to manage its inventory efficiently, its managers and employees must be educated and trained in inventory management. This fact, however, is often unjustifiably neglected. What is more, Annarau et. al. (2004) in their survey of students, managers and faculty employees concluded that inventory management skills are perceived as one of the three least important managerial skills required for a successful career in the hospitality business. Uneducated managers and employees are not capable of properly planning inventory and have no knowledge of inventory planning methods, which could, ultimately, result in an interruption of the production process.

The process of inventory planning consists of several steps that refer to inventory optimization, favorable procurement terms and rational use of inventory (Ružić, 2006). To ensure the inventory planning process is as accurate and efficient as possible, it is important that companies develop an inventory planning system. As a rule, well-designed inventory planning systems have greater potential to ensure savings but they also require developed standards, systems for the regular monitoring of inventory consumption, and coordination with production and sales plans (Krpan, Maršanić, Jedvaj, 2014). With regard to the nature of its business operations, a company can approach inventory planning and control in a number of ways. There are differences between inventory planning in exclusively manufacturing companies and inventory planning in service producing companies. A manufacturing company that efficiently manages its inventory will base its stock on customer needs which are typically determined based on consumption in the previous year (Otchere, Adzimah, Aikens, 2016). A manufacturing company that fails to manage its inventory in the right way will often encounter problems in forecasting appropriate stock levels and have high stock-keeping costs (Liang, 2013). In the food industry, poor inventory management often leads to unmarketable stocks of products past their expiry date (Ruteri, 2009). Farsad and Lebruto (1993) argued that inventory problems specific for service industry are generally related to inaccuracies regarding time and quantity of orders resulting in mistakes in determining the optimum stock that should be on hand for each item. The optimum inventory that should be on hand means the amount of inventory that is needed to fulfill customer demand between the vendor’s scheduled deliveries. Specific optimum is under the influence of factors such as a reliability of sales prediction, sales volume, storing, maintaining adequate receiving and issuing controls or vendor reliability and efficiency.

Relative to manufacturing companies, service companies have a faster service production process and most goods are procured in smaller quantities and more often, so as to avoid the expiration of stocked goods and minimize inventory holding costs. Unlike manufacturing companies, service companies mostly have a small number of employees and, as a result, responsibilities for inventory management are not clearly established. Restaurants often use qualitative methods to forecast the needed quantities of fresh foodstuff stocks but this is not recommended for stocked goods that have a short shelf-
life (Putra-Masud, Yudoko, 2013). As a result of the ambiguous demarcation of responsibility for inventory management and subjectivity in determining the right amount of inventory needed, hospitality companies often find themselves with excess inventory, which can ultimately lead to having unmarketable stock.

Many manufacturing companies as well as service companies faced with inventory management problems state that some of the main reasons for such problems are bad decisions made by those in charge regarding stock quantities, failure to take into consideration consumption in the previous period, overly rapid consumption of stock, lack of automated systems and efficient software to facilitate inventory management, and irregular inventory control (Otchere, Adzimah, Aikens, 2016; Liang, 2013; Putra-Masud, Yudoko, 2013; Ramadhan, Sinatupang, 2013; Severt, De Pietro, Herrera, 2010).

Inventory control is of particular importance in the hospitality industry (food and beverage processing), where inventories are mainly perishable goods, which is the main cause of cost overruns (Fauza et. al, 2015; Nagib et al, 2016).

According to some estimations, inventory control in a continuous or periodic cycle could help to reduce stock-holding costs by 12% (Ramadhan, Sinatupang, 2013). There are several inventory control models used in the food and beverage industry and those are Make-to-Stock (products are made and stored as inventory based on forecasted demand) model, Make-to-Order (production process begins only after the orders are received from the customers) model, and Economic Order Quantity (quantity that minimizes the total holding costs and ordering costs) model. Nagib et al. (2016) and Claudio, Zhang, Zhang (2007) pointed out that hybrid inventory control model based on Make to Order, Make to Stock and Economic Order Quantity, plays a significant role in the food and beverage industry providing the best way to maintain the raw materials in an optimal level, which results in minimization of investment in an inventory.

The use, development and implementation of information systems specialized in inventory management are becoming a central issue for companies in today’s business environment. With regard to the level of information technology development in the period in which an information system was designed, inventory management models are either traditional or modern. The fundamental difference between the two types of models is that modern inventory management models provide a broad view of how the company is run and how each process within production, distribution and sales is managed. Traditional models, on the other hand, are based exclusively on a single segment of inventory management, that is, they focus on optimizing procurement to reduce stock quantities thus reducing business costs (Lawrence, Pasternack, 2002).

Regardless of which type of inventory management system a company is using, what is important is that the system contributes to making production and procurement cost-effective, protects against the uncertainty of procurement markets and helps to align supply with uneven demand.
RESEARCH METHODOLOGY

Primary research was carried out using a structured questionnaire to determine the attitudes of the employees of hospitality organizations concerning inventory management. Face-to-face surveys were conducted on premises in the region of Rijeka in the period from March to June 2019. Ninety organizations were asked to participate in the survey, of which 60 were willing to take part, making a response rate of 66.7%. The respondents were employees working in the service, i.e. they are in direct contact with the guest, whether they are self-employed or working for the owner.

The questionnaire was designed based on an overview of the relevant literature, that is, on previous studies. The structure of the questionnaire is presented in Table 6.

Table 1: Questionnaire structure

<table>
<thead>
<tr>
<th>Questionnaire parts</th>
<th>Number of questions</th>
<th>Source of variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Basic data about the establishment</td>
<td>7</td>
<td>The authors</td>
</tr>
<tr>
<td>3. Supplier relationships</td>
<td>1 (4 items)</td>
<td>The authors</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>10</strong></td>
<td>-</td>
</tr>
</tbody>
</table>

Source: the authors

The first part of the questionnaire, containing seven questions, refers to *basic data on hospitality organizations*. In this part, respondents were asked to mark to which group their organization belongs according to the Regulations on the classification and minimal requirements of hospitality facilities (Official Gazette 138/06), the total number of employees, the average value of inventory, average supplier lead times, and how many times, on average, orders for goods are made. In the remainder of the questionnaire, a 5-point Likert scale (1=strongly disagree, 5=strongly agree) was used to measure the degree of agreement with the statements provided. The second part of the questionnaire, referring to *inventory planning*, contained one question comprising 11 items.
Respondents were asked to mark their level of agreement with statements relating to elements of inventory planning. The third part, focused on supplier relationship, had one question comprising four items. Here respondents were asked to mark their level of agreement with statements referring to elements of supplier relationship. The fourth and last part of the questionnaire, centered on inventory control, had one question with seven items. Respondents were asked to mark their degree of agreement with statements relating to elements of inventory control. Regarding the variables in the questionnaire measured using a Likert scale, the reliability of the measuring instrument was analyzed using Cronbach’s alpha coefficient, which was 0.647. This value suggests good internal consistency and stability of the factors and high scale reliability.

**RESEARCH RESULTS**

The first part of research results refers to the description of the basic data of the surveyed hospitality organizations. Respondents were asked to select the group to which their establishment belongs according to the Regulations on the classification and minimal requirements of hospitality facilities (Official Gazette 138/06). Results are shown in the below graph.

**Figure 1: Type of hospitality organizations surveyed**

![Graph showing the distribution of hospitality organizations surveyed](source: the authors)

Of the 60 hospitality establishments surveyed, 28 (46%) belong to the group “Restaurants”; 30 (50%), to the group “Bars”; only one (2%), to the group “Catering facilities” and one (2%), to the group “Simple service facilities”. Considering the low representation of the latter two groups in the survey, they were excluded from the processing of results. Accordingly, only the results pertaining to restaurants and bars were analyzed and interpreted.

To gain insight into the size of the hospitality establishments, respondents were asked to mark the number of employees in the facility. Results are shown in Figure 2.
Figure 2: Number of employees in the surveyed bars and restaurants

Source: the authors

As the graph demonstrates, most of the surveyed bars and restaurants (39 or 67%) have up to ten employees; 15 of them (26%) have 11 – 20 employees; and only four (7%) have more than 20 employees.

Figure 3: Average inventory value of surveyed bars and restaurants

Source: the authors
Figure 3 presents the average inventory values of the surveyed bars and restaurants. As regards restaurants, it is evident that the inventory value of 64% of restaurants is higher than HRK 30,000. Conversely, in the majority of bars (66%), inventory values are in the range up to HRK 30,000.

Responses to the question concerning average supplier lead times are presented in Figure 4.

**Figure 4: Average supplier lead times**

![Average supplier lead times chart]

Source: the authors

Figure 4 indicates that the procurement process is highly efficient and that, as a rule, there are no delays or other problems. Not one respondent reported supplier lead times longer than 14 days. In fully 95% of surveyed organizations, ordered goods are delivered within one week, and only 5% of organizations wait for delivery from 7 to 14 days.

To the question on how frequently orders for goods are placed, the respondents replied as shown in Figure 5 below.

**Figure 5: Ordering frequency**

![Ordering frequency chart]

Source: the authors
As illustrated in the above figure, most of the surveyed organizations (58%) typically order goods on a weekly basis. The share of them placing orders on a daily basis is high (26%) while only 3% of them order goods on a monthly basis. Considering that it is likely that most organizations have limited warehouse space and that the delivery process is efficient and quick as demonstrated earlier, it is not surprising that goods are mostly ordered on a weekly basis.

Respondents were asked to indicate their level of agreement with statements referring to inventory planning and their responses are presented in Table 2.

Table 2: Employees’ attitudes regarding inventory planning
(1= strongly disagree, 5= strongly agree)

<table>
<thead>
<tr>
<th>Statement</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Average score</th>
</tr>
</thead>
<tbody>
<tr>
<td>We order products and raw materials only when inventory levels fall to a</td>
<td>58</td>
<td>1</td>
<td>5</td>
<td>3.76</td>
</tr>
<tr>
<td>predetermined point</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>We monitor inventory levels continuously (rather than periodically)</strong></td>
<td>58</td>
<td>2</td>
<td>5</td>
<td>4.46</td>
</tr>
<tr>
<td>We use software to monitor inventory levels</td>
<td>58</td>
<td>1</td>
<td>5</td>
<td>3.40</td>
</tr>
<tr>
<td>Inventory levels are automatically updated after an invoice is issued or</td>
<td>58</td>
<td>1</td>
<td>5</td>
<td>4.01</td>
</tr>
<tr>
<td>a transaction is carried out</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We procure products and raw materials at specific time intervals</td>
<td>58</td>
<td>2</td>
<td>5</td>
<td>3.78</td>
</tr>
<tr>
<td><strong>Inventory level checks are essential for effective inventory management</strong></td>
<td>58</td>
<td>2</td>
<td>5</td>
<td>4.45</td>
</tr>
<tr>
<td><strong>We are able to accurately forecast future demand for specific products</strong></td>
<td>58</td>
<td>2</td>
<td>5</td>
<td>4.13</td>
</tr>
<tr>
<td>We order certain items only on demand</td>
<td>58</td>
<td>1</td>
<td>5</td>
<td>3.40</td>
</tr>
<tr>
<td>Certain items are always ordered in the same (fixed) quantity</td>
<td>58</td>
<td>1</td>
<td>5</td>
<td>3.01</td>
</tr>
<tr>
<td>We are often faced with the problem of expired products/raw materials on</td>
<td>58</td>
<td>1</td>
<td>5</td>
<td>2.68</td>
</tr>
<tr>
<td>stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We are often faced with high costs of holding products/raw materials on</td>
<td>58</td>
<td>1</td>
<td>5</td>
<td>3.08</td>
</tr>
<tr>
<td>stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: the authors

In the rating of variables pertaining to inventory planning, the statement “We monitor inventory levels continuously (rather than periodically)” has the highest average score (4.46), followed by “Inventory level checks are essential for effective inventory management” with an average score of 4.45. The statement “We are able to accurately forecast future demand for specific products” also has a high average score of 4.13. On the other hand, the statements with the lowest average scores are “We are often faced with the problem of expired products/raw materials on stock” (2.68), “Certain items are always ordered in the same (fixed) quantity” (3.01) and “We are often faced with high costs of holding products/raw materials on stock” (3.08). These scores suggest that the surveyed bars and restaurants are largely aware of the importance of consistently monitoring inventory levels and see this as a precondition to effective inventory.
management. It can also be concluded that the surveyed organizations properly plan inventory because generally they do not have problems with expired food products or with high costs of holding goods on stock.

When asked how satisfied they are with the supplier relationship, the respondents answered as shown in the following table.

Table 3: Employees’ attitudes regarding supplier relationships
(1= not at all satisfied, 5= completely satisfied)

<table>
<thead>
<tr>
<th>Statement</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Average score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead times for products/raw materials ordered</td>
<td>58</td>
<td>3</td>
<td>5</td>
<td>4.30</td>
</tr>
<tr>
<td>Quality of delivered products/raw materials</td>
<td>58</td>
<td>3</td>
<td>5</td>
<td>4.30</td>
</tr>
<tr>
<td>Communication with suppliers</td>
<td>58</td>
<td>3</td>
<td>5</td>
<td>4.40</td>
</tr>
<tr>
<td>Speed of problem resolution</td>
<td>58</td>
<td>2</td>
<td>5</td>
<td>4.13</td>
</tr>
</tbody>
</table>

Source: the authors

The high average scores of statements pertaining to supplier relationships suggests that the surveyed bars and restaurant employees are very satisfied with both the lead times for goods ordered (score of 4.30) and the quality of delivered products (4.30) and in particular with their communication with suppliers (4.40). They are slightly less satisfied with the speed of problem resolution (4.13).

When asked to indicate the degree to which they agree with statements concerning inventory control, the respondents replied as shown in Table 4.

Table 4: Employees’ attitudes regarding inventory control
(1= strongly disagree, 5= strongly agree)

<table>
<thead>
<tr>
<th>Statement</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Average score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibilities for receiving, issuing, accounting and keeping products and raw materials on stock are clearly demarcated in our facility</td>
<td>58</td>
<td>2</td>
<td>5</td>
<td>4.0</td>
</tr>
<tr>
<td>The management takes the appropriate steps to protect goods against loss or theft (e.g. by keeping goods in locked premises and granting access only to authorized personnel)</td>
<td>58</td>
<td>1</td>
<td>5</td>
<td>4.0</td>
</tr>
<tr>
<td>Goods are only issued from stock based on a requisition form, approved by the responsible person</td>
<td>58</td>
<td>1</td>
<td>5</td>
<td>3.3</td>
</tr>
<tr>
<td>The management consistently checks the alignment between physical inventory and inventory records.</td>
<td>58</td>
<td>1</td>
<td>5</td>
<td>3.8</td>
</tr>
</tbody>
</table>
Concerning the variables pertaining to inventory control, the statement “Education in the proper handling of inventory is provided to employees” has the best score (4.2). The statements “Responsibilities for receiving, issuing, accounting and keeping products and raw materials on stock are clearly demarcated in our facility” and “The management takes the appropriate steps to protect goods against loss or theft (e.g. by keeping goods in locked premises and granting access only to authorized personnel)” also have a high score of 4.0.

Based on the above average scores it can be concluded that the surveyed bars and restaurants, i.e. their employees, are aware of the importance of inventory control and how vital it is to educate employees in handling various types of goods. It is also encouraging that employees understand their role in inventory control and that management undertakes measures to prevent the theft or loss of goods as well as puts in place work processes in which employees are absolutely clear about who is responsible for what function of inventory management. On the other hand, it is surprising that at a time when technologies are well developed and readily available than ever before, some properties still do not have a system that signals when inventory levels fall below a predetermined point (score of 3.0). Consequently, the level of agreement with the statement that the organization has “effective mechanisms for inventory control” is rather low (score of 3.4).

**CONCLUSION**

Business planning is one of the activities fundamental to the successful performance of hospitality companies. A company’s business plan analyzes the current state and future prospects of key performance elements and, as required, brings decisions to develop new approaches to business operations to enhance performance. At the operational level of hospitality businesses, procurement planning and inventory planning are major activities, making it essential for the people in charge to have a clear understanding of the procurement process and procurement logistics, the development of supplier relationships, the tracking of costs of activities connected to goods procurement, and inventory management.

This paper contributes to the body of knowledge in the field of inventory management in hospitality industry, more precisely in bars and restaurants. High share of food and beverage costs in food and beverage revenues imposes the need for careful management
of all procurement and production processes. The paper’s contribution to practice is evident from the empirical research, carried out on bars and restaurants that are characterised by a rapid stock turnover process, where research findings can help them to improve inventory planning and control mechanisms.

The results of empirical research indicate that, for the most part, according to their employees’ attitudes, the surveyed hospitality organizations, i.e. bars and restaurants, manage their inventory in a proper and timely manner and are aware that continuous inventory monitoring affects the efficiency of the work process. Namely, only a small number of respondents reported problems with expired inventory or high costs of holding foodstuffs on stock. It can also be concluded that, to a considerable extent, the employees of surveyed organizations acquire education about inventory management and about the clearly demarcated obligations and responsibilities concerning inventory control. On the other hand, results suggest that software is underutilized in both inventory planning and inventory control and that it is of great importance to increase the application of software to make the processes of inventory planning, procurement and inventory control faster and more efficient, thus in the long run reducing employee workloads.

A limitation of this study is the relatively small sample of surveyed hospitality organizations, i.e. bars and restaurants. In future studies it would be interesting to explore the differences in inventory management between facilities that use software to manage inventory and those that do not. Future studies would also benefit from comparing attitudes of managers, owners and their employees.

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