

The Adoption of Electronic Inventory Control System in Cairo Five-Star Hotels

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Abstract

This paper aims to evaluate of the stores' department to adopt electronic inventory control systems in five -star hotels in Cairo. To achieve the objective of the study, the 170 questionnaire forms distributed to stores staff (store manager, assistant store manager, storekeeper, assistant storekeeper, inventory controller) in 34 Five -star hotels in Cairo. The number of valid questionnaires for analysis is 157 with a response rate (92.35%). The data analysis was conducted through the statistical package of social sciences SPSS (version 26.00). The study found that the electronic inventory control systems' benefits affect the stores department in Five-star hotels in Cairo to adopt electronic inventory control systems.

Keywords: Electronic Inventory, Inventory Systems, Stores, Hotels.

Introduction

An electronic inventory control system can be defined as a system that enables the stores Although the importance of inventory control technologies and its applications, limited studies have investigated the impact of adopting electronic inventory control systems in increasing the strict control over inventory in hotels. Aluri and Munnangi, (2011) in their study focused on the only Radio Frequency Identification (RFID) as one type of electronic inventory control system. The study focuses on other types of electronic inventory control systems such as inventory control software, barcoding and scanner technology, quick response code, and radio frequency (RF) technologies. Roseline, (2012) applied a study on a manufacturing organization (The Nigerian Breweries PLC) Wanjohi et al. (2013) researched descriptive survey design and applied their study on only major supermarkets, thus, presenting both a methodological gap and a scope gap as well. The current study applied to hotels' scope in Cairo and used both the quantitative and descriptive approaches based on The Technology Acceptance Model (TAM) to test the study hypotheses and achieve its objectives.

The main issue in hotels is using the paper -worked systems that may lead to low inventory efficiency control. In addition to this, manual inventory control systems need extraordinary amounts of time and effort to track any errors in these paper reports and records, with the probability of inaccuracy and the existence of human error, which leads to the lack of credibility of the data available about the stored materials and negatively affects the turnover rates of the stock, which was on the contrary to what was found in other hotels which have already applied electronic inventory control systems. Through a pilot survey carried out by the researcher on a sample of the target hotels, it was found that some of these hotels have already adopted some electronic inventory control systems in their stores' department to control the inventory, but some factors eliminate the full and the optimal adoption of these systems were found which might reduce the benefits that could be gained from applying such systems if applies together with the manual ones.

Literature Review

Inventory Control

Inventory control is the monitoring of all inventory actions and movements including ordering, procurement, receiving, storage and issuing to ensure that the correct and the satisfied levels of the stock are maintained to meet the continuous hotel enterprise's demand, to keep inventory and ordering costs to a minimum level, and to avoid inventory obsolescence, damage, loss or theft (Periasamy, 2009). While inventory control systems refer to the systems and strategies that

include all aspects and a coordinated set of rules and procedures that allow managing inventories including purchasing, shipping, receiving, tracking, warehousing and storage, turnover, and reordering to meet customer demand (Adam and Sammon, 2004). Nassar and Hegab (2006) assured that the inventory control systems include two types which are the manual inventory control system and the electronic inventory control system.

Benefits of the electronic inventory control system

Shah and Shin (2007) stated that electronic inventory system makes it easy and accurate to register the uncountable types of products and items as they enable registering these items in a glance and ensuring accurate product information including product name and its serial number, category and description (quantity/ size/ weight), supplier/ manufacturer location. Product price and cost, minimum and maximum stock levels which all registered on electronic bin cards have their code numbers indicated and provide instant access to any product from any location or department (Rubin, 2007).

Furthermore, Dimitrios and Koumanakos (2008) added that electronic inventory system can provide the stores' department with updates and the most recent information, as it knows exactly how many items are there in the stores? This means the stores' department can check the inventory and order the needed supplies with a click. A technological inventory system updates automatically once an item has been scanned out of the inventory, so all stores department staff know what is always available or not.

Langabeer and Stoughton (2001) affirmed that electronic inventory system enables the instant data entry, update, flow and collection then directly involves automatic updating of stock status, levels, and records as any transaction took place, which lead to accurate decision-making relating forecasting the future demand and preparing inventory planning reports.

An electronic inventory control system provides a wide range of important and accurate documents, including expense statements, invoices, checks, and purchase requisitions, order confirmations, stores documents and automated reports on low stock amounts, and notify all store personnel about all of them. It also provides store personnel with the ability to review and print any needed documents related to transaction history by item or transaction type (i.e. issuing, receiving, etc.), and by the name of the receiving department (Salawati et al., 2012).

Zenz (2004) stated that manual items issuing is completely exhausting and time-consuming, while electronic items issuing is much more adaptable than the manual ones as they help to automate processes, relieve much of the time commitment, free up stores department staff to be more focus on inventory control activities. Hence, once one of the hotel departments has requested any of the products, the needs of those departments are quickly met with ease and without the need for a long and exhausting paper documentary cycle. Rezik and Sahin (2012) mentioned that the number of issued items is recorded and checked automatically showing when and where are they are issued out. As a result, issuing and transferring process between stores department and other hotel departments takes only minutes. Electronic inventory systems help in tightening the monitoring and controlling over the stored items and allow stores department to keep a track of materials in demands as well as provides an accurate status of inventory in stores department plus their ability to determine the real-time state of the different items (Kenneth, 2002).

According to Gramaccioni (2009), electronic inventory control systems are easier to track product inflows and outflows and all the different stock levels and they also allow to forecast demand so that accurate orders are placed as soon as the re-order level is reached. Electronic inventory control systems also enable tracking shelf life and inventory turnover ratios of the

different materials to guard against waste and financial loss and facilitate periodic stocktaking weekly, monthly, or yearly to keep accurate inventory levels.

Coyle et al. (2016) added that electronic stock systems can keep the stock from damage, shortage, theft, or loss as once an item reaches a certain low level, the electronic inventory control system will alert stores department personnel through notifications and alarm features to re-order that item. This helps the stores' department to avoid running out of products, reducing stock-outs, avoid expiring items, and losing too much capital in inventory by always keeping the personnel aware of the inventory situations and levels. Also, the electronic inventory control system will provide enhanced security features to restrict access to only stores department personnel to avoid the stock from getting stolen.

Rae and Subramaniam (2008) mentioned that electronic inventory control systems enable store departments to minimize the sluggish inventory which in general is the one that has gone through a certain period without movement and reflects untapped or unguided funds in inventory. Electronic inventory control systems provide a complete, accurate and periodic reports about what is stored, which ensures the continuity of the existence of a stock of these materials to cover the actual needs without dissipation, and without accumulation that ultimately leads to the destruction of this stock or part of it.

An electronic inventory control system saves money in the long run by keeping a close eye on the stock. If inventory control is automated, the stores' department can ensure that it is not spending more of its budget than necessary or ordering not needed products. Also, a detailed electronic inventory control system can give the stores department better ideas of which items are most critical to its business (Bolton, 2001).

Manual stock control is not only requiring a large fraction of the stores' department time but it is also challenging and exhausting as store department employees should chase large amount of paperwork to maintain inventory at its suitable levels and which considered a great chance for human error (Langabeer and Stoughton, 2001). Having an electronic inventory system for the inventory control tasks removes human errors and decreases the time, effort, power, and money and the result will be the professional stores' department performance. Thus, the electronic inventory control system will integrate all the relevant hotel operating systems like the procurement, accounting, sales and invoicing systems so that data can be entered once and used by different channels and also help in monitoring cash flow and inventory costs and assets (Song and Zipkin, 2011).

Electronic inventory control systems with modern technologies can increase efficiency and communication between store departments and other hotel departments as it becomes easier to share inventory information throughout the hotel different departments and the data is instantly available and can be also available to different users in different locations at the same time. Moreover, the electronic inventory solutions depend on using wireless technology which enables transmitting real-time information to a central computer system anytime when transactions occur within the stores' department (Anupindi et al., 2005).

Readiness to adopt electronic inventory control systems

It should be recognized that the failure of electronic inventory control systems in stores departments is often due to the lack of stores department staff's willingness to adopt such systems either because they do not recognize the desired benefit of using them or because they find a great complexity in adopting them which in turns causes a lot of trouble when dealing with them, and therefore, lead to the inability to perform their daily tasks as required and the result is a system failure. But, with the willingness and intention of stores managers to take advantage of

these systems in the future, hotels would be able to use electronic inventory control systems effectively and efficiently (Porter and Donthu, 2004).

Electronic technology in inventory control

As a result of the previous century electronic technology revolution which has become a vital and integral part of every business plan, hospitality industry tried to keep up with the times and turned towards adopting electronic technology and information technology depending on the computer with its components hardware (includes all physical equipment that enables computers to function as the CPU, disk drives, keyboards, printers or screens) and the generic software (the instruction for hardware that is on the computer-directed to develop and use an information system), such as word processing, spreadsheet, specially written records management applications, and the worldwide web (LAN and WAN) which can use a wide range of peripheral devices such as scanners, bar code readers, printers and among others to improve their work efficiency and information flow (Davila et al., 2003). Then, a barcode or RFID system could be chosen to be adopted in conjunction with the inventory control software for a complete solution that will improve store departments accuracy in scanning, tracking, recording, and reporting inventory movement (Shah and Shin, 2007).

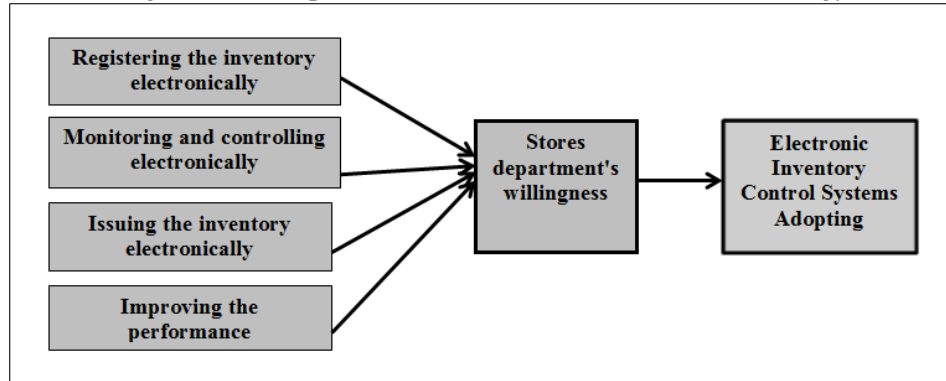
That was evident that stores department lately tend to adopt electronically and a computer-based inventory control systems which are an automated way to ease accessing inventory information, reduce the necessary paperwork in all storage transactions, minimize storage costs, tight control over the stored items, increase the speed on providing stores management with the comprehensive reports of the stored items, estimate storage rates over periods, calculate storage rates (maximum, minimum and demand inventory rates), measure the differences between the expected and the actual usage rates, provide an easy access to storage information whether about the value of items stored or the capital invested in the inventory and facilitate stock-taking processes (Ngai et al., 2009).

Conceptual framework and hypotheses development

The study framework aims to explain its variables (see Figure 1). The explanations serve as a literature base, the following hypotheses should be tested:

- H1:** There is a statistically significant effect of registering the inventory electronically on the stores department's willingness in the targeted hotels to adopt electronic inventory control systems.
- H2:** There is a statistically significant effect of monitoring and controlling on the stores department's willingness in the targeted hotels to adopt electronic inventory control systems.
- H3:** There is a statistically significant effect of issuing and ordering the inventory electronically on the stores department's willingness in the targeted hotels to adopt electronic inventory control systems.
- H4:** There is a statistically significant effect of improving the performance of stores department on its willingness in the targeted hotels to adopt electronic inventory control systems.
- H5:** There is a statistically significant effect of the stores department's willingness on their actual adoption of electronic inventory control systems.

Figure 1: Conceptual framework of the research Methodology



Data Collection Instrument

The questionnaire was used as a data-gathering method for collecting primary data of the study as it was distributed to the stores' department staff in the targeted hotels.

The study is based mainly on the factors of the TAM model that is modified by the researcher, which shows the link between users' acceptance of a particular technology and his readiness and willingness to use and adopt it. The TAM model assumes that when users are introduced to new technology, some factors determine their decision about how and when that technology will be used. It is therefore found that user's acceptance of new technology is determined by two main variables. The model suggests that the variables of the perceived usefulness and easy to use technology are the main factors that influence a potential user's decision on whether or not to use the technology (Lindsay et al. , 2011; and Chaffy and Wood, 2015).

Based on this modified model, the questionnaire form was designed to collect the required data as it is the appropriate method to collect data of the TAM technique.

The questionnaire form data was then presented to some of the stockholders and some academic professors specialized in the subject of the research to achieve the correctness of the wording, the clarity of the terms, the suitable order of the statements used, and the range to which they were answered. This was followed by designing the final questionnaire form after making minor adjustments.

The final questionnaire form consists of four parts. The first part deals with the respondents' demographic data such as gender, age, educational level, and occupation, while the second part discusses the benefits of using electronic inventory control systems in the stores' department and consists of twenty-two statements. The third part deals with store departments willingness to adopt electronic inventory control systems and contain four statements. The fourth part illustrates the degree of adopting electronic inventory control systems in the stores' department and includes nine statements. All variables in the second and third sections of the questionnaire were measured using a Likert Five Rating Scale (1=Strongly Disagree, 2= Disagree, 3=Neutral, 4= Agree and 5=Strongly Agree), while the variable of the fourth section of the questionnaire was measured using a Likert Five Rating Scale (1=Very Poor, 2= Poor, 3=Moderate, 4= High and 5=Very High).

Population and Sampling

The range of this study is directed to Five-star hotels in Cairo. According to the statistics of the Egyptian Hotel Guide, 37th edition (2018-2019) the number of Five-star hotels in Cairo is (34) hotels. As a result, the complete census method was adopted to the research population due to its small size. ,To achieve the objectives of the study, the researcher distributed one hundred and seventy questionnaire forms to stores department staff (store manager, assistant stores manager, storekeeper, assistant storekeeper, inventory controller) in five-star hotels located in Cairo. The

number of valid questionnaires for analysis is one hundred and fifty-Five with the response rate (91.17%).

Data analysis

The data analysis was conducted through the statistical package of social sciences SPSS (version 26.00). Smart PLS (the partial least squares for a variance which is based on structural equation modeling {SEM} was also used to analyze the mediator variables and test the relationships between direct and indirect variables for the rapid testing of the mediator variables and their indirect effects.

Then frequencies, means, standard deviation, regression, and percentages were calculated. Then, one-way analysis of variance (One-Way ANOVA) was used to determine how groups differed significantly from each other, and to recognize the correlation between variables. Reliability analysis was carried out to measure the results reliability of the questionnaire statements, and factor loading is used to test indicator reliability. High loadings on a construct indicate that the associated indicators seem to have much in common, which is captured by the construct (Hair et al., 2017). Factor loadings greater than 0.70 are considered to be very significant (Hair et al., 2010). The loadings for all the items exceeded the recommended value of 0.7, as represented in table (3), which indicates that the loadings for all the items in the model fulfilled all the needed requirements. The statistical significance level was set at $p < 0.05$, which corresponded to the significance levels adopted in similar researches.

Finding and discussions

Descriptive Analysis

Study Sample Properties

The respondents’ personal data and properties are summarized using basic descriptive statistics such as frequencies and percentages to present a description of the gathered data. Table (1) illustrates the frequency and percentage of demographic features of respondents in the study sample.

Table 1: Demographic Data Analysis

Variables	Categories	Frequencies	Percentages
Gender	Male	136	87%
	Female	19	13%
Age	From 30 to 40 Years	28	19%
	From 41 to 50 Years	68	43%
	From 51 to 60 Years	39	25%
	61 and More	20	13%
Educational level	Moderate	50	33.0%
	High	70	46.7%
	Post	35	20.3%
Position	Stores Manager	31	20%
	Assistant Stores Manager	31	20%
	Store Keeper	31	20%
	Assistant Store Keeper	31	20%
	Inventory Controller	31	20%
Work Experience	1-5 Years	41	26%
	6 - 10 Years	75	48.6%
	More than 11 Years	39	25.4%
Work Experience	1-5 Years	36	23.7%
	6 - 10 Years	84	54%
	More than 11 Years	35	22.3%

Table (1) shows that 136 (87%) of respondents are males while only 19 (13%) are females, indicating that the majority of stores staff at stores departments within the selected hotels are males.

In terms of age groups, it is noted from the above table that most respondents with a percentage (43 %) are between 41 and 50 years old, (27.3%) of respondents are between 51 and 60 years old and (25 %) of total respondents are between 30 and 40 years old. It is clear from these percentages that most of the stores department staff in hotels occupy the late youth category between 41 and 50 years old.

Concerning position properties of stores departments staff within the targeted hotels, it is evident from the table (1) that (20 %) of the respondents are storekeepers, (20 %) of the respondents are stores managers, (20 %) of them are assistant stores managers and (20 %) of total respondents are inventory controllers.

Regarding educational level, (46.7%) of respondents hold a higher education degree, (33%) of respondents have a moderate educational degree and (20.3%) of respondents hold post studies degree. These results show that hotels are interested in employing higher education employees.

According to work experience years, it is obvious that most of the respondents are in the category (6-10 years) representing (54 %) of the whole sample. This finding indicates the majority of employees are those of intermediate experience.

Benefits of using electronic inventory control systems in store departments at five-star hotels in Cairo.

Benefits regarding registering the inventory electronically

Table 2: Benefits regarding registering the inventory electronically

Benefits regarding registering the inventory electronically	Mean	Std. Deviation	Loading (> 0.5)	α
1. Give each item a certain code or a serial number to determine its appropriate stock levels and facilitate stocktaking processes.	3.69	1.26	0.954	0.896
2. Categorize products into different groups and classifications, making them easier to be handled.	3.71	1.43	0.956	
3. Easy to determine the location and level of each item in stores after supplying and issuing processes.	3.81	1.19	0.913	
4. Easy to know the financial value of each item separately.	3.80	1.28	0.964	
Total mean	3.75	1.29		

Note: α : Cronbach's Alpha Coefficient

The data illustrated in the table (2) indicate that the total mean of the respondents' agreement on the benefits of using electronic inventory control systems in registering the inventory is (3.75). This value is closer to the value {agree (4)} which refers to respondents' agreement upon the benefits of using electronic inventory control systems in registering the inventory. The value of the total standard deviation is (1.29) which demonstrates that there is no dispersion among the respondents' opinions.

From table (2), it is also clear that the mean value (3.81) is the greatest among the other values and its standard deviation value is (1.19) which reflects the agreement of the respondents regarding the point that electronic inventory control systems make determining the location and level of each item in stores after supplying and issuing processes easier. This may be consistent with what was mentioned by (Rubin, 2007) who stated that electronic inventory control systems enable stores department in hotels to trace any particular item(s) in terms of location and quantities available and levels as such systems provide a complete record of how a certain item has moved in and out from source to finished product during a given period.

Electronic inventory control systems achieve the direct and immediate control over the number of units received or issued and helps in the process of checking how the available quantities and levels of inventory are consistent with the recorded balances of different types of inventory including what has already supplied to the stores or what has issued from them. Through this electronic control, any relevant datum is automatically adjusted right away which in turn enables detecting any stagnation, variation, or lack of the number of units, either during the receiving, issuing, or storing the items to avoid occurrence of such defect in the future.

According to the table (2), the mean value (3.69) is the smallest mean value and its standard deviation value is (1.43) which indicates the consensus of respondents on the benefits of using electronic inventory control systems in giving each item a certain code or a serial number to determine its appropriate stock levels and facilitate stocktaking processes. This agrees with what was stated by (Dimitrios and Koumanakos, 2008) who illustrated that the stores' department staff within hotels can categorize and register products electronically using certain codes and symbols in the form of alphabets, or numerical numbers, to express the specifications and characteristics of stored items, where each code - whether a number or a letter - crosses a property or attribute of the item.

Electronic coding phase saves time and effort more than traditional manual methods by easily identifying the required items and their location accurately once their codes are clicked, enables distinguishing between similar items, facilitates the use of computers and modern techniques in monitoring the movements of items and recording them in documents and automated control of their assets, assists in central and accounting controls of the sub-stores, helps in conducting stocktaking and inventories processes in a short time and at a lower cost which in turn raises the efficiency of inventory control operations and enables to establish appropriate foundations for procurement and storage procedures. This electronic coding can follow the alphabetical system, the digital system, the mixed alphabetical and numerical system, composite digital system, color scheme, or can be according to any coding method that suits the user and facilitates the processing and handling of these data.

Stores department staff should keep in mind that the electronic coding stage is preceded by the electronic classification phase which is performed to sort large numbers of different materials in the stores' department, whereby these materials are distributed into major groups and then divided into subgroups according to their homogeneity. The electronic classification may be based on weight, size, the user, the nature and characteristics of the commodity items, or depending on the financial values.

Benefits regarding monitoring and controlling the inventory electronically

Table 3: Analyzing the benefits regarding monitoring and controlling the inventory electronically

Benefits regarding monitoring and controlling the inventory electronically	Mean	Std. Deviation	Loading (> 0.5)	α
1-Control inventory turnover ratios, which makes it easier to know the movement of items and their levels.	3.50	1.38	0.930	0.864
2- Easy tracking of items electronically according to electronic bin cards.	3.57	1.24	0.955	
3- Identify the sluggish inventory to enable overcoming this problem.	3.62	1.36	0.935	
4- Conduct periodic stocktaking at any time with ease of getting inventory deviation reports.	3.73	1.33	0.943	
5- It is easy to determine and review safety stock levels for each item periodically.	3.69	1.25	0.929	

6- Easy to determine the economic quantity at which each item should be ordered.	3.56	1.37	0.910
7- Send instant reminders via e-mail or (SMS) for items that are about to reach their expiry dates.	3.63	1.28	0.890
8-Send electronic alerts via E-mail or (SMS) when an item reaches the re-order point as well as items that have been less or more than the optimal level.	3.57	1.36	0.941
Total mean	3.61	1.32	

Note: α : Cronbach's Alpha Coefficient

The results are shown in the table 3 demonstrate that the total mean of the participants' agreement on the benefits of using electronic inventory control systems regarding monitoring inventory is (3.61). This value is closer to the value {agree (4)} which reflects the agreement of the respondents' opinions upon the benefits of using electronic inventory control systems regarding monitoring inventory. The value of the total standard deviation is (1.32) which demonstrates that there is no dispersion among the respondents' opinions.

According to the table (3), it is obvious that the mean value (3.73) is the greatest among the other values and its standard deviation value is (1.33) which confirms the respondents' agreement on the idea that electronic inventory control systems enable conducting periodic stocktaking at any time with ease of getting inventory deviation reports. This confirms what was mentioned by (Gramaccioni, 2009) who showed that when the periodic inventory and stocktaking of the stores is carried out by traditional manual methods it takes a lot of time and effort and the inventory may come out incorrect at the end, but with the application of electronic inventory control systems and programs, the workers in the stores' departments can dispense with the traditional paper documents whereby a click of a button, they will be able to easily enter the actual inventory and compare it with the balances recorded in the system to identify the entire quantity in their stores.

Since inventory is the backbone of any hotel business, stores departments need to conduct inventory and stocktaking processes electronically to ensure that the movement of production, sale or purchase does not stop with the end of inventory, make sure that there is no misappropriation, embezzlement or theft of inventory in the stores, identify the damage in the stock and remove it from the balances and guarantee that there are sufficient balances and assets of the material all the time.

Electronic stocktaking operations provide the needed information that represents the actual reality of the workflow through which inventory situation can be assessed by discovering the strengths and weaknesses of inventory work, strengthening strengths, reducing weaknesses, correcting any deviation discovered, developing the storage system and making decisions related to improving work in stores departments.

Based on table (3), it is clear that the mean value (3.50) is the smallest among the other values and its standard deviation value is (1.38) which confirms the respondents' agreement on the idea that electronic inventory control systems help in controlling inventory turnover ratios, which makes it easier to know the movement of items and their levels.

This is in line with what (Kenneth, 2002) has affirmed as he mentioned that inventory turnover, which refers to the speed of movement of a product over a period of time, is one of the methods used to measure the performance of stores departments because it is one of the important indicators that are useful in the process of inventory control. Electronic inventory control systems enable the stores' departments staff to divide inventory turnover into four types according to its balance: (1) materials with fast turnover rates as these materials are heavily consumed because

they represent the necessary materials to supply the production process so their level of storage is high and the rate of purchase and storage is frequent, (2) materials with normal turnover rates during the year, (3) special materials that are frequently requested according to the management needs, and (4) materials with slow turnover rates as these materials are less stored and may be required as needed.

Through the continuous electronic monitoring of the inventory turnover rates of the stored materials and items, the validity of the inventory methods as well as the effectiveness and efficiency of both inventory planning and control techniques are checked, evaluated, and modified. The higher the inventory turnover rates, the better the product management and vice versa.

Benefits regarding issuing and ordering the inventory electronically

Table 4: Analyzing the benefits regarding issuing and ordering the inventory electronically

Benefits regarding issuing and ordering the inventory electronically	Mean	Std. Deviation	Loading (> 0.5)	α
1- Easy issuing of the required items by different hotel departments through the automatic issue and exchange forms.	3.61	1.38	0.957	0.914
2- Immediate updating of items data and prices, which helps to obtain more accurate data and reduce errors in store management records.	3.65	1.24	0.965	
3- Estimate future inventory needs more accurately, reducing the amount of idle stock.	3.45	1.36	0.945	
Total mean	3.6	1.28		

Note: α : Cronbach's Alpha Coefficient

The findings reported in the table (4) confirm that the total mean of the respondents' agreement on the benefits of using electronic inventory control systems regarding issuing and ordering inventory is (3.6). This value is closer to the value {agree (4)} which affirms the agreement of the participants' opinions upon the benefits of using electronic inventory control systems regarding issuing and ordering inventory. The value of the total standard deviation is (1.28) which emphasizes the absence of dispersion among the respondents' opinions.

It is apparent from the table (4) that the mean value (3.65) is the greatest among the other values and its standard deviation value is (1.24) which asserts the respondents' agreement on the idea that electronic inventory control systems update all items data and prices, which helps to obtain more accurate data and reduce errors in stores management records. This is consistent with what has been already referred to by Zenz, (2004) who stated that electronic inventory control systems allow the immediate updating of all stored items data including the value of the capital invested in the inventory, the needed orders, the flow of items, the stock levels (the minimum and maximum stock levels and re-ordering point), the prices and the supplier's information and transactions.

Electronic inventory control systems also provide their stores' staff with the ability to view previously saved data and to modify the data that needs to be modified due to some errors in the process data entry. The updating process relies on an ongoing electronic basis that reflects the evidence of smooth continuity of work within the stores' department in a way the guarantee always obtaining accurate data and reduce errors in stores department records.

Table 4 also shows that the mean value (3.45) is the smallest among the other values and its standard deviation value is (1.36) which affirms the respondents' agreement on the statement that using electronic inventory control systems within stores departments could help in estimating future inventory needs more accurately which in turns reducing the amount of idle stock. This is in the line with what has been affirmed by Rekik and Sahin, (2012) who mentioned that

electronic inventory control systems avoid stores departments from purchasing more or fewer quantities which in turns affects positively the process of forecasting future demand that is based on stores department previous history and the already entered and automatically updated available information relating the current inventory. Estimating future stock more accurately requires that stores department should use electronic inventory control systems that provide an accurate information system about tracking stock movement and determining future stock needs, the times or dates on which each item must be reshipped, the financial investment amount required to order these and how to provide the required items. Thus electronic inventory control systems ensure that the production process is not interrupted or stalled due to the lack of availability or shortage in a certain item and that stores departments will be able to fulfill and meet their obligations permanently towards other hotel departments.

Benefits regarding improving the performance of the stores' department

Table 5: Analyzing the benefits of improving the performance of the stores' department

Benefits regarding improving the performance of the stores' department.	Mean	Std. Deviation	Loading (> 0.5)	α
1- Easy to recover and make a backup of any relating inventory data in case of loss due to an error in the system.	3.71	1.30	0.886	0.866
2- Possibility to easily and quickly print all needed documents, reports, and forms of the stock documentary cycle such as (received, issued, and returned notes).	3.75	1.38	0.929	
3- Shrink the duration of the stock documentary cycle associated with routine manual procedures of the stores' department.	3.64	1.32	0.915	
4- Electronic follow-up of purchasing requisitions and orders in cooperation with the purchasing department.	3.56	1.29	0.940	
5- Increase the efficiency and minimize errors of employees due to the speed and accuracy of extracting the required information.	3.45	1.10	0.946	
6- Improve the efficiency of store management through the easy exchange of information with other departments, which leads to smooth work in the hotel.	3.62	1.34	0.949	
7- Provide the top management with any needed information about the stock easily and quickly.	3.52	1.28	0.946	
Total mean	3.61	1.29		

Note: α : Cronbach's Alpha Coefficient

Table (5) indicates that the participants' total mean relating the benefits of using electronic inventory control systems in improving the performance of the stores department is (3.61) and its total standard deviation is (1.29). By comparing the total mean value to the Likert Scale, it was found that the total mean value is between the values {agree (4)} and {neutral (3)}, but it is closer to the value {agree (4)} which emphasizes the respondents' agreement on the benefits of using electronic inventory control systems in improving the performance of stores department.

It is obvious from the table (5) that the statement: possibility to easily and quickly print all needed documents, reports and forms of the stock documentary cycle such as (received, issued and returned notes) has the mean value (3.75) which is the greatest among the other values and its standard deviation value is (1.38) which asserts the respondents' agreement on the idea that electronic inventory control systems easily and quickly print all needed documents, reports and forms of the stock documentary cycle.

This is in the line of what was mentioned by Song and Zipkin, (2011) and Salawati et al., (2012) who highlighted that electronic inventory control systems provide the advantage of printing all the needed documents, reports, receipts, vouchers and forms related to the documentary cycle of

stores with the ability to archive the daily movement of the inventory. These documents include all the needed information about what the stores' department contains and through which the stores' department can follow the movement of the inventory and control it. These records and models differ according to the types of stores in stores department at hotels, the difference in their sizes, the nature of their work, and the speed of stock turnover in them. Generally, the stores' department is intended to use the electronic records and documents stored to Eliminate the manual paper archive system and replacing it with an electronic archiving system, because of the ease of dealing with electronic documents, the ability to correct errors that occurred quickly and provide electronic documents for more than one department in the hotel at any time; record all the quantities of the stored materials, their dates of arrival, and the destinations from which they are brought in a glance; know the quantities of materials that have been prepared to be issued from the stores' department, and the departments which are requesting them with a click; be used as a stock planning and controlling tool and calculate the amount of damage, theft or embezzlement by knowing the shortfall amount by comparing the balance that exists with the balances shown in the stock records.

These documents are based on the data that had previously been entered and updated automatically starting from the request of supplying the materials until they are received in the stores' departments plus the invoices and receipts of the returns followed by the registration and storage of those materials and monitoring their movements, exchange and transfer to the other departments within the hotel according to their needs and requirements.

The superiority of electronic inventory control systems appears in the possibility of printing all reports related to stock-taking either in or a detailed manner precisely and easily accompanied by comments and analyses in the form of tables, statics, percentages, charts or figures which makes it easier for stores departments to control the inventory, plan for it and make appropriate and rational decisions concerning the stored items. Thus, electronic inventory control systems help reduce the stressful manual paperwork cycle, which incurs stores departments time and effort, which may eventually include many errors.

It is also clear from the table (5) that the smallest mean value is (3.45) and its standard deviation value is (1.10) which indicates the respondents' general agreement on the role of electronic inventory control systems in increasing the efficiency of employees due to speed, the accuracy of obtaining required information and minimizing errors.

This is consistent with what was supported by Langabeer and Stoughton, (2001) who stated that the manual control system is highly dependent on the behavior of individuals, which increases the possibility of error. Individuals may forget to record transactions or simply mistake the levels of stored items. These errors may result in unnecessary additional orders that increase inventory costs. Human error can also lead to not ordering enough product, which means a shortage of one of the items stored at the time of need. This is in addition to the loss of time and effort in conducting the inventory because of the complexity and abundance of information about the inventory and its movements within stores. All previously mentioned problems can be overcome and avoided through the application of electronic inventory control systems.

Stores departments staff's willingness to adopt electronic inventory control systems in store departments at five-star hotels in Cairo

Table 6: Analyzing the stores' department willingness to adopt electronic inventory control systems in stores departments

Stores department's willingness to adopt electronic inventory control systems	Mean	Std. Deviation	Loading (> 0.5)	α
1.Enhancing electronic inventory control systems adoption depending on a sound basis in the future.	3.95	1.35	0.982	0.979
2.Adapting all procedures to facilitate adopting electronic inventory control systems	3.83	1.34	0.973	
3. Providing the updated requirements for the adoption of electronic inventory systems.	4.5	1.28	0.983	
4. Improving and upgrading training needs in accordance with the updated requirements of electronic inventory control systems.	3.92	1.36	0.982	
Total mean	4.05	1.33		

Table (6) showed that the total mean of the stores' department's willingness to adopt electronic inventory control systems is (4.05) and its total standard deviation is (1.33). The total mean value closer to value {agree (4)} that emphasizes the existence of stores department willingness to adopt electronic inventory control systems in stores departments at the targeted hotels in Cairo. This is consistent with Porter and Donthu, (2004) who emphasized that the existence of a great willingness for stores departments staff to adopt electronic inventory control systems, is an indicator of the actual adoption behavior. The greater the stores' department willingness in the targeted hotels, the greater the activation and adoption of electronic inventory control systems.

The presence of the great willingness motivates and directs the behaviors of stores departments staff who do not optimally apply the electronic inventory control systems to already adopt these systems by following the sound procedures, clarifying the benefit sought from the adoption of electronic inventory control systems, providing application requirements, preparing training programs for employees that increase understanding the new electronic inventory control systems and overcoming all obstacles and complexities to facilitate the adoption of these systems.

As for stores department staff at the targeted hotels who have already adopted electronic inventory control systems in their departments, their willingness and readiness will enable them to identify the positive points of adopting electronic inventory control systems and try to strengthen these points. This is plus determining the shortcomings and defects facing electronic inventory control systems adoption and trying to overcome them and working on updating those systems.

All of the previously mentioned points enable abandoning manual inventory control methods that consume a lot of time and effort, increasing understanding the new electronic inventory control systems which lead to stores department staff's job satisfaction as they will not face complications that may hinder performing their daily work, which in turns will positively affect their performance and achieve the perceived benefits from adopting such electronic control systems.

The degree of adopting electronic inventory control systems in stores department in five-star hotels in Cairo

Table 7: Assessing The degree of adopting electronic inventory control systems in stores department in five-star hotels in Cairo

The degree of adopting electronic inventory control systems in the stores' department.	Mean	Std. Deviation	Loading (> 0.5)	α
1. There are enough modern computer hardware used to download electronic inventory control systems.	4.8	1.16	0.947	0.897
2. There are an electronic database system helps to integrate all	2.64	1.46	0.948	

The degree of adopting electronic inventory control systems in the stores' department.	Mean	Std. Deviation	Loading (> 0.5)	α
operations in stores department.				
3.Stores department uses some software applications (Word, Excel, PowerPoint, SPSS).	4.8	1.16	0.929	
4.Stores department uses the barcode devices in the various inventory control stages.	2.69	1.33	0.941	
5.Stores department uses RFID tags (silicon chips) to track the inventory cycle of incoming and outgoing products.	1.27	1.51	0.956	
6.There is an advanced electronic link between stores department and other hotel departments.	3.80	1.44	0.941	
7.There is a constant contact between the hotel and the suppliers via internet to ensure optimal stock levels.	2.65	1.38	0.947	
8.Stores department uses modern applications (software) to monitor inventory electronically.	2.94	1.35	0.960	
9.The hotel has electronic point of sales systems that are constantly linked to inventory levels.	2.73	1.54	0.953	
Total mean	3.15	1.32		

Note: α : Cronbach's Alpha Coefficient

The previous table, indicates that the respondents' means regarding these criteria ranged from (4.8) to (1.27), and the total mean regarding the degree of adopting electronic inventory control systems in the stores department is (3.15) and its total standard deviation is (1.32). By comparing the total mean value to the Likert Scale, it is found that the value of the total means is located between the values {high (4)} and {moderate (3)}, but it is found that the value of the total means is closer to {moderate (3)} which indicates that the degree adopting electronic inventory control systems in stores departments within hotels understudy in Cairo is above the average.

Based on what has already been mentioned, it is clear that the implementation of electronic inventory control systems in stores departments within the targeted hotels in Cairo has not reached its optimal levels yet.

From table (7), it is also noticed that the mean value (4.8) is the greatest among the values shown in the previous table. This value is relevant to the statements number one and number three. This value indicates that the majority of stores departments within Five -star hotels in Cairo have a sufficient number of modern computer sets that can be used easily to download electronic inventory control systems and that stores department uses some software applications such as (Word, Excel, PowerPoint, SPSS, Spreadsheet). This is also is consistent with what was approved by Davila et al., (2003) and Shah and Shin, (2007).

There is no doubt that the use of computers of different types in stores departments at hotels is a necessity because of the nature of stores work on the one hand, and the other hand, because of the advantages and benefits that this means can bring. The most important of these advantages are:

- Accuracy and speed in document preparation, accounting processes, and execution of inventory procedures such as registrations, tabs, analysis, and document preservation.
- Improving the process of keeping stores department documents and reports plus facilitating their collection, storage and back up operations in the form of information for all.
- The speed at accomplishing similar inventory operations at once and recording a large number of different storage operations in a short time with a limited number of employees.

- The tightened internal control and self-control over the various storage operations so that errors can be avoided at different storage stages.
- Increasing confidence in the information which is then presented in reports so that this information can be used by stores department decision-makers, as a sound and reliable basis for decision-making regarding inventory planning.
- Provides full flexibility in the design of stores department information systems, through the processes of entering, modifying, storing, and retrieving information promptly.

Stores departments at hotels also use various application programs such as (Word, Excel, PowerPoint, SPSS) on a large scale, as these application programs help stores department in carrying out many tasks and operations regarding inventory control by relying on several ready functions available in multiple languages. The following shed light on what stores departments can accomplish by implementing these applications:

- The ability to process different texts, control the types and sizes of fonts, and format paragraphs and pages with the ability to work on more than one document at a time.
- Providing many ready-made charts, statistic graphs, tables, and figures that reflect store department activities and assist them in carrying out inventory data analyze.
- Helping in carrying out various accounting operations and statistical analyzes.
- Offering aid in setting and planning the hotel's annual budget in general and that of the stores' department in particular.
- Setting the payroll and payment systems for stores department staff.

Based on the previous table, it is also shown that the statement: stores department uses RFID tags (silicon chips) to track the inventory cycle of incoming and outgoing products has the smallest mean value which is (1.27) and its standard deviation value is (1.51). This indicates that RFID technology is still poorly adopted in store departments within the surveyed hotels in Cairo. This is contrasted with what was mentioned by Ngai et al., (2009) who stated the role that RFID technology plays in controlling inventory effectively.

The RFID technology consists of three main parts: (1) RFID tags that consist of the microchips containing the stored data and the antenna, (2) the RFID reader and transmitter device, and (3) the computer software or host systems and the databases. RFID technology is based on radio waves that enable it to automatically identify or trace the various stored items. There are several ways to identify the stored materials via RFID technology, but the most common is to store a serial number and other information related to the stored material on a chip attached to the antenna so that this antenna enables the chip to send this information to the RFID reader device, which in turns converts the radio waves coming from the chip to digital information that can be identified and processed by the computer.

RFID is an updated technology that has overcome the problems that resulted from the use of barcodes such as the limited amount of information that can be stored on the barcode labels, the inability to reprogram the barcode, the necessity to face the barcode labels every time to the scanner so that the scanner can read the label and identify the product, the inability of the barcode to read more than one label at the same time, the inability of the barcode to give a separate number for each stored unit, but only one code for units of the same type.

In stores departments at different hotels, radio frequency technology (RFID) helps in the ability to locate the stored materials and make sure that they already exist in their place with ease, which saves them from theft and damage and enables stores department staff to effectively monitor and track the stored materials and products remotely. It can also be used to perform automatic stock-

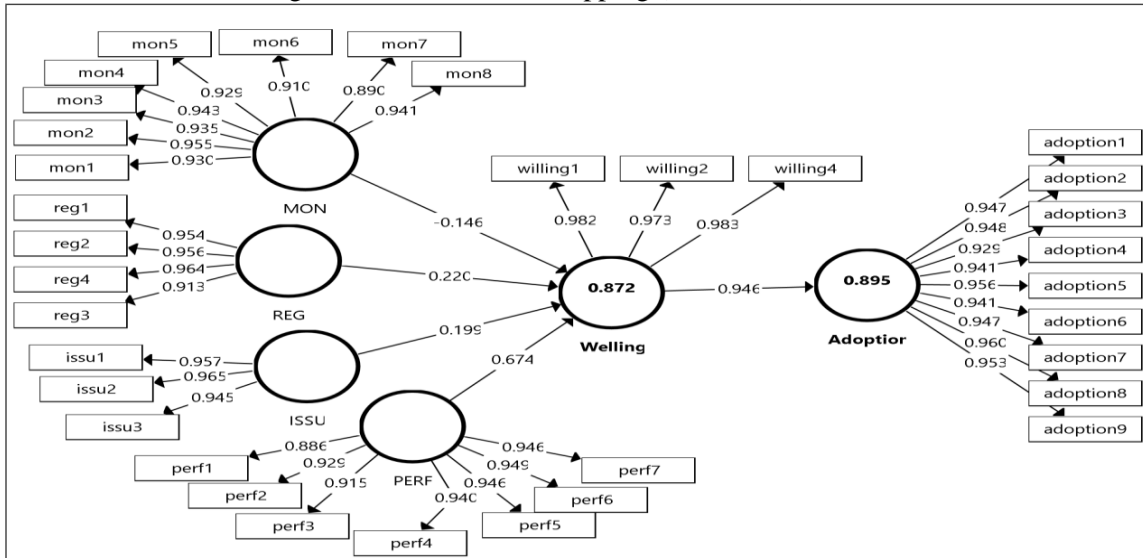
taking, which in turn leads to reducing the workforce at stock-taking processes because it does not require a manual examination for the stored items. Therefore, this helps in the accuracy and speed of the inventory operations and control and improving the quality of work stores departments by providing accurate information about inventory conditions, reducing costs and losses due to errors and assisting managers in identifying and correcting the ineffective stores' operations and transactions.

Structural Model Assessment

The structural equation model is the second main process of structural equation modeling (SEM) analysis. Once the measurement model is validated, the representation of the structural model can be made by specifying the relationships among the constructs. According to Hair et al., (2010) the structural model provides details on the relations between the variables.

Hair et al. (2017) suggested that assessing the structural model is done by observing the beta (β), R^2 , and the corresponding t-values via a bootstrapping procedure with a resample of 5,000. This is in addition to emphasizing the effect sizes (f^2) and the predictive relevance (Q^2). As for Sullivan and Feinn, (2012), they argued that the p-value determines whether the effect exists but it does not reveal the size of the effect. Figure (2) shows the PLS bootstrapping (T Statistics) results which were drawn on the version PLS (3.0).

Figure 2: The PLS bootstrapping (T Statistics) results



Key: Adoption (Adop): adopting electronic inventory control systems, Registering (Reg): registering the inventory electronically, Monitoring (mon): monitoring and controlling the inventory electronically, Issuing (issue): issuing and ordering inventory electronically, Performance (perf): improving the performance of the stores' department, and Willingness (willing): Stores department willingness to adopt electronic inventory control systems.

Testing study hypotheses

The structural model assessment as shown in figure 2 and table 8 indicates the hypothesis tests. Registering the inventory electronically, monitoring and controlling the inventory electronically, issuing and ordering inventory electronically, and improving the performance of the stores' department significantly predict stores department willingness to adopt electronic inventory control systems. Hence, H1, H2, H3, H4 and H5 are accepted with ($\beta = 0.220, t= 2.366, p <0.001$), ($\beta = 0.146, t= 0.786, p <0.001$), ($\beta = 0.199, t= 2.014, p <0.001$) and ($\beta = 0.674, t= 7.423, p <0.001$) respectively. Furthermore, the stores' department's willingness to adopt electronic inventory control systems positively affect adopting electronic inventory control systems. As a result, H2 is accepted with ($\beta = 0.946, t= 161.038, p <0.001$) respectively.

Table 8: Structural path analysis results

Hypo	Relationships	Beta	Standard error	T value	P Values	Decision
H1	REG-> Welling	0.220	0.093	2.366	0.018	Supported
H2	MON-> Welling	0.146	0.186	0.786	0.432	Supported
H3	ISSU -> Welling	0.199	0.099	2.014	0.045	Supported
H4	PERF-> Welling	0.674	0.091	7.423	0.000	Supported
H5	Welling-> Adop	0.946	0.006	161.038	0.000	Supported

Key: Registering (Reg): registering the inventory electronically, Monitoring (mon): monitoring and controlling the inventory electronically, Issuing (issue): issuing and ordering inventory electronically, Performance (perf): improving the performance of the stores' department, Willingness (willing): Stores department willingness to adopt electronic inventory control systems, and Adoption (Adop): adopting electronic inventory control systems

Conclusion and Recommendations

The results of the study confirmed that electronic inventory control systems benefits positively affect the staff's willingness in the stores departments in the targeted hotels to adopt electronic inventory control systems. These results explain the fact that the more awareness of the stores departments staff regarding the benefits of electronic inventory control systems, the greater the stores departments staff's willingness towards adopting electronic inventory control systems.

The results of the study also revealed that the benefits of electronic inventory control systems have an indirect impact on the actual adoption of electronic inventory control systems through the stores departments staff's willingness to adopt those systems. This confirms the mediation role played by the stores departments staff's willingness in this context. This means that the indicators of actual adoption of electronic inventory control systems will be improved better as the stores departments staff well realizes the benefits of electronic inventory control systems, which then would contribute to supporting the staff's willingness to adopt electronic inventory control systems.

Recommendations

Firstly: recommendations addressed to the top management at five-star hotels who should:

1. Increase the effective adoption of electronic inventory control systems by spreading awareness in stores departments regarding the obtained benefits and the most important advantages of these systems application and trying to overcome the problems may hinder the effective application of such systems.
2. Clarify the possibilities and facilities that can be provided to stores departments to meet the needed requirements of the effective electronic inventory control systems adoption, through holding the continuous training programs to keep pace with the permanent development that accompanies this field.
3. Hold periodic meetings with the stores departments managers to identify and discuss the most serious obstacles that prevent the effective electronic inventory control systems adoption and propose mechanisms to overcome them.
4. Take an advantage of the experiences of stores departments in some hotels that have already adopted some electronic inventory control systems in terms of identifying the advantages and benefits of these already implemented electronic inventory control systems and determining the needed requirements for their application.
5. Consider the necessity compatibility of inventory control hardware and software in stores departments with other hardware and software available in hotels, in order to save money, time and effort when conducting periodic maintenance and updating operations and training programs.

6. Standardize the quality and versions of inventory control hardware devices and software applications and try to replace the older systems with the more advanced ones, in order to keep up with the rapid development in this field and ensure the efficiency of stores departments performance.

Secondly: recommendations addressed to stores departments at five-star hotels who should:

1. Define training needs in accordance with the scientific methods in order to achieve what these training programs aimed at in raising the efficiency of stores department staff and qualifying them properly plus providing them with knowledge and performance requirements that enhance the application of those systems.
2. Encourage stores department staff to adopt electronic inventory control systems by granting material and moral incentives to those who are distinguished and interested in applying these systems.
3. Ensure the sufficient availability of the advanced inventory control hardware and software means including devices and applications such as barcodes readers, scanners, printers, and silicon chips (RFID).

Future Research

Since the scope of the study lacks researches and studies that address topics similar to the subject of the study, and in order to enrich this scope with relevant studies and researches, the researcher suggests conducting many future studies in aspects that the current study did not address, such as: the role of electronic inventory control systems in human resource development in five-star hotels and the role of human resources development in supporting and enhancing electronic inventory control systems adoption in five-star hotels.

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