Strategies for sustainable socio-economic development and mechanisms their implementation in the global dimension

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The authors of the book have come to the conclusion that it is necessary to effectively use modern approaches to developing and implementation strategies of sustainable socio-economic development in order to increase efficiency and competitiveness of economic entities. Basic research focuses on assessment of effectiveness the investment projects, use of cluster analysis the innovative activity of regions, formation and use of financial resources, competitiveness management and use of modern methods sale of the goods, effectiveness the activities of territorial communities. The research results have been implemented in the different models and strategies of project-oriented resource management, state management of development of territorial communities, implementation of the concept inclusive oriented economic development, efficient functioning and development of electric power enterprises, agricultural production, tourist industry, lifelong learning concepts. The results of the study can be used in decision-making at the level the economic entities in different areas of activity and organizational-legal forms of ownership, ministries and departments that promote of development the economic entities on the basis of models and strategies for sustainable socio-economic development. The results can also be used by students and young scientists in modern concepts and mechanisms for management of sustainable socio-economic development of economic entities in the condition of global economic transformations and challenges.

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APPLICATION OF MODERN METHODS OF GOODS SALE IN COMMODITY LOSS MANAGEMENT

The specifics of trading activities, the need to constantly search for modern methods of servicing the population indicate the emergence of internal problems that need prompt regulation, timely warning and prevention. The transition to self-service trade is a powerful catalyst for increasing the problem of commodity losses in trading enterprises. Today, there is an active, purposeful and constant search for opportunities to cause losses to both staff and customers.

With the increase in the share of self-service stores, the expansion of trade enterprises, the growth of staff and the complexity of the organizational structure of retail trade enterprises, the problem of commodity losses occupies the first place in the world.

The peculiarity of commodity losses is that inventory losses are not formed on a one-time basis but are accumulated consecutively during the economic activity during the period between inventory and are revealed through inventory (except for actual losses), namely information is received with a considerable delay and reflects in the information unchangeable past events. An important nuance is that inventory losses cannot be avoided, but can only be minimized.

High social standards, a level of cultural development and social consciousness are not an obstacle to theft and fraud in trade institutions, which are the main cause of commodity losses in Europe. Different types of abuse from both customers and staff compose 69% ($ 18.17 billion) of total losses. Retail managers also confirm the fact of staff thefts existence. European retailers' losses due to staff abuse amount to $ 11.3 billion, and compose 33% in the total amount of losses. Administration miscalculations, internal mistakes, non-criminal losses amount to $ 9.9 billion or 12.4% [1].

In Ukraine in 2018 trade enterprises losses amounted 19.6 billion USD, of which 29% accounts for staff theft; 30% – for losses caused by administrative intentional and accidental errors and omissions; 31% – on goods losses from theft of buyers; 10% – on deception or fraud of suppliers [1].

The question of automation of trade establishments has been reflected in the practical activity of foreign and domestic enterprises, as well as in the works of scientists: S. Belinsky [2] N. Brasilia [3], V. Dergachova [4], S. Ivakhnenkova [5], S. Kucherkova [7], S. Melnichenko [8], V. Muravsky [9]. It worth noting the works of V. Muravsky, which the author's vision of the application of information technologies in the accounting of goods are presented, in particular their bar coding and radio frequency identification. Ivakhnenkov S. and Kucherkova S. examine the current state and tendencies of the development of information computer technologies for e-business in Ukraine. Belinskaya S. studies the problems of accounting process automation for effective enterprise management. In researching the impact of globalization processes on society, Brazil N. places the problem of the interconnection of information technology and accounting on the first place gives practical examples of the use of modern information technologies, which are intended to increase the efficiency of the enterprise and increase its competitiveness in today's dynamic market. Melnichenko S. defines the role and place of information technologies in marketing and management of domestic enterprises.

The purpose of the article is to investigate practical mechanisms for preventing commodity losses of a trading enterprise through creating an economic security system by applying of modern methods of the goods sale activation.

The information base for the research was the works of domestic and foreign scientists, research of world companies, relevant online sources. Structural and systematic approaches, methods of synthesis and analysis,

comparison and generalization, scientific abstraction were used to achieve the staged goal.

Practice and scientific research show that the organization of modern trading activities of enterprises requires the development and creation of an economic security system that takes into account the negatives that can be caused by each party to economic relations, both buyers and staff.

Staff is an asset of a company that should be protected by the trading security system and as the main source of damage against which it should protect itself.

Loss prevention can be done either by the way of eliminating the possibility of damage, or by the way of eliminating the reasons that push for such actions, or by a combination of both these ways. In this regard, employees and buyers will intentionally cause harm when there are reasons for theft and there are opportunities to do this unauthorized, uncontrolled, unpunished and usually unnoticed by others.

Psychological work on creation positive employee motives is the main resource for ensuring the safety of the enterprise. Work with employee motivation should be undertaken by managers and trade security specialists.

In order to improve the effectiveness of the system of preventing losses of the commercial object, it is important that every employee among staff realize himself as the subject of security and actively promoted the administration and security service in this direction. This advantage of the enterprise can be realized only if the sales personnel undergo appropriate training in the field of trade security.

In the domestic market of trading services the number of self-service stores is increasing, the main advantage of which is to ensure the convenience of the purchasing process due to the free access of buyers to the goods and their automated identification at the checkout, which contributes to the increase of cases of fraud, theft by both staff and buyers. All large trading companies use bar code marking of goods. Not so long ago, scientists, researchers and practitioners spoke about the relevance of the introduction of wireless radio frequency marking of goods (RI-tags), which performs the functions of the system of identification of goods and anti-theft system (Fig. 4.1).

Nowadays, barcode technologies and radio frequency identification are acquiring outdated status. Since 2017, the concept of “store of the future” has emerged, which uses the latest and most secret methods and technologies. The peculiarity of such stores is the lack of employees, cash desks and queues.

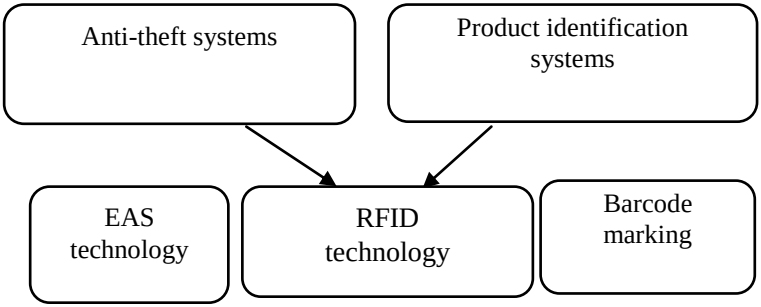

Figure 4.1 Systems of unauthorized removal of goods [6]

About 10 such stores already operate in the world, according to predictions of retail researchers in 10 years such stores will be distributed worldwide [1]. The first attempt to launch an (almost) non-employee store was in 1937 in the US – but it failed. At the Keedooze store, shoppers were given a kind of "key" to select the product behind the glass windows. Then the product got on the conveyor and the visitor received an invoice. Cheapness and innovation have attracted thousands of buyers. But then the technology was not worked out enough to cope with a large number of buyers, conveyor belts were slow and many errors occurred, for example, buyers were receiving the wrong product. The store ceased to exist in 1949.

The second attempt was made by the world-renowned Metro Cash & Carry trading net, which in 2003 put forward the concept of "The Shop of Future". In the German Rheinberg city, with the partnership of suppliers of hardware and software for retail automation, a commercial establishment was built, the principle of which was based on fully automated customer service using radio frequency identification of goods.

The premises of the trading floor and warehouse must be equipped with wireless scanners that read the RI tag information on the goods. The automated system interconnects all devices: special personal shopping carts; shelves equipped with wireless sensors; electronic price tags; information monitors; cash registers.

Built-in shopping cart scanner allows buyers to independently scan the purchased goods and speed up the process of payment at the checkout. Without removing the goods from the basket, the buyer must indicate the number of his basket and the information about the product

is immediately transmitted to the cash desk, where the buyer only has to pay for the goods. All goods must be marked in the form of electronic price tags, the price of which is generated by an automated system and transmitted by radio signals. The price is immediately transferred to the store shelf and cash desk. Information monitors are used to provide additional information about the basic characteristics of the product and are a complement to traditional printed materials.

The monitors are activated immediately after the buyer removes the desired item from the shelf. Goods shelves equipped with radio signals provide automatic recognition of the movement or removal of goods and notify the central information system. As the goods on the shelves decrease, requests for replenishment of the range from the warehouse are made automatically. The anti-theft system prevents external and internal fraud of personnel and buyers actions, and also controls the naming and quantity of goods that the buyer has taken from the electronic shelf, but has not put in the basket, employees who have access to the goods, by the availability of goods in the warehouses and store shelves. Thus, using an automated system, you can detect unauthorized removal of merchandise outside the store, and it is possible to control which person at which point took the item from the electronic shelf and did not return it, but did not put it in his personal cart.

According to the founders, one of the reasons for the poor performance of the benchmarks of the "Shop of the Future" was the lack of a developed methodology for accounting and analytical reflection of the facts of economic activity related to the automated sale of goods. However, the developed concept of automated self-service has become widespread and is partly used in the activities of modern retail outlets, where buyers can choose and pay for the goods either with the help of support staff (consultant, manager, cashier), or independently – through payment terminals using the identification function goods.

Radio frequency identification technology is being actively implemented in the network of commercial establishments and industrial enterprises in Europe. The significance of indicators of the use of radio frequency identification technology at European enterprises is explained by the significant advantages of the use of radio frequency labels in the accounting and analysis of commodity circulation compared with the identification of goods by bar codes [9].

The third attempt to create a store of the future was in 2016 by Wheelys Moby Store. This is a Swedish startup, whose shop is located near Shanghai. There are no staff at all, and all purchases are made

through the app on a smartphone.

When entering the store you need to scan the QR code with your smartphone. Also the codes are on all goods. Taking the item off the shelf, the buyer scans with the smartphone and money is spent from the bank card. Peopple pay for purchases at this store using AliPay, an application of the Chinese company Alibaba.

In 2018, the store was equipped with additional sensors to make the purchase process easier and safer. Wheelys is partnering with Hefei University to install a new security system. With a large number of sensors, the system can collect customer biometric data and keep track of when they are removing products from shelves. After removing goods – the store deducts money from the buyer's account, if he put the goods back – money is returned. It is not possible to steal because you cannot enter the store without an account. Buyers must register for an account and if one item is removed from the cart, the system will contact the buyer ID to prevent theft. The store is equipped with cameras and sensors connected to the computer vision system. Special algorithms recognize the visitor at the entrance and keep track of everything he or she takes or returns to the shelf. Any product here is under observation and cannot disappear from the vision of the cameras. After leaving the store, the system deletes the customer's biometric information.

A similar system was also launched in 2016 and runs on Amazon Go in Seattle. According to the official website of the American retailer, the store uses technologies similar to those used in unmanned vehicles – computer vision, fusion sensors and deep learning. Before entering the store, you need to install the free Amazon Go app. And get registered. After registration, you can go to the store to buy goods from the shelves and put them in a bag and in your pocket. The idea is to automatically track the activity of visitors in the trading floor, controlling what items they take off the shelves or put back. Each item taken from the shelves will be automatically added to the buyer's account. Payment is made when leaving the store. The purchase amount is automatically deducted from the buyer's account. Exit is made through the same turnstiles without authorization or any action by the buyers. There are also no audio or light signals. And then a check comes on the smartphone.

The system's developers say that within the "Just Walk Out" technology, the store uses "computer vision, deep learning algorithms and a combination of sensory data from different sources". The main source of information is hundreds of special cameras mounted in the ceiling. They track every zone of the store from different corners.

Basically, these are ordinary RGB cameras, only with Amazon's built-in circuit boards that allow them to perform basic tasks on their own: track motion, find an object, try to differentiate it from neighbors. Nearby there are the modernest cameras capable of measuring depth, recording the flight time of the signal to each point. The resulting images are sent to a "CPU" that Amazon keeps secret. It does the main job: real-time identification of who is who. Which person removed the product from the shelf or put it back. This processor is the main feature of the whole project, without which the developed system cannot work. Even in the human eye it is difficult to understand which of the similar people took what product from a dozen almost identical. The system must detect this lightning-fast, error-free, and in hundreds of locations at a time. Previously, at such a scale and at such speeds, no one even wanted to take on the task of developing such technologies.

The development of this store was carried out for 5 years, it implemented a number of advanced technologies to pay for purchases and prevent theft. Shop without sellers, cashiers and staff (only 1 staff at the entrance, one is watching the assortment on the shelves, 6 are preparing their own meals).

You can also steal goods in a regular supermarket. Amazon, on the contrary, makes it more difficult for a buyer to put a product without the ability to bypass the system. Unless there is a critical vulnerability, Just Walk Out can be advertised as the modernest supermarket anti-theft model.

Another thing is that the technology has bugs and they were noticed on the first day. Tweets from people from whom the store did not withdraw money for a particular product began to appear. Amazon replies that they can regard it as a gift from the supermarket. The percentage is quite low and there is no way to completely eliminate such mistakes in the company, so it does not even try to eliminate it.

Five years ago, when Amazon started its project, there was no technology. Therefore, the developed system will be further improved.

Nowadays, there are 10 such stores in the world (Seattle, San Francisco, Chicago), Scandinavia, Australia, China, and Japan. By 2021, 3000 Amazon stores are going to be launched [1].

Thus, Just Walk Out technology is a multifunctional system that performs the tasks of anti-theft and product identification systems, the introduction of which will contribute to the economic effect of minimizing losses, reducing the complexity of warehousing and accounting and analytical work due to their automation, reduction of

fraud and negligence accidents leading to growth of revenue and operating profit of the merchant net.

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