Decision making based on internal audit of logistics processes controlling

1. INTRODUCTION

Audit history is very long, because its origins is determined even for 3500 years before our era, as evidenced by documents from the time of the Mesopotamian civilization. Similar behaviour of merchants of introducing different amounts on transactions determinations can be found in Egypt or China. Therefore since immemorial time some procedures that accompanied all transactions can be observed, for example: supply of grain to the granary was possible only in the presence of a witness, verifying and confirming all transactions, fulfilling the role of financial factor. In Europe, the origins of the audit shall cover the period of antiquity, where all the notes made by accountants were also verified. In ancient Rome, all institutions dealing with public finances employed officials who under oath committed themselves to guard the national exchequer. So-called "interrogation accounts" were implemented. The name comes from the word "audit" (Latin "auditus" means hearing), consisting of one official documentation compared with the other documentation. The modern internal audit was created in the time of the industrial revolution in England and then the methods and procedures they used the British auditors have been transferred and implemented in the thirties among the United States. At the same time the first official audit institution was created in 1941 in the USA: The Institute of Internal Auditors (IIA). Thanks to the Institute the Internal Auditor magazine was established, which made the public aware of internal audit importance and methodology. In subsequent years, IIA established new regulation of the internal auditor which periodically underwent revision, so that internal audit was constantly developing. It was moved from the area of finance management, in terms of material, financial and information flows according to Pfohl's (2001) terminology which applies to the entire logistics system of enterprises. As a result of the logistics solutions and improvements audit should be proposed that allow to eliminate imperfections and makes it possible to make decisions leading to more efficient functioning of the logistics system (Waszczuk i Wawrzynowicz, 2001).

2. THE ROLE OF INTERNAL AUDIT IN THE CONTROL OF LOGISTIC PROCESSES

In the literature there are numerous definitions of internal audit. For example, according to Art. 272 of the Act on public finances, it is an is independent and objective activity, the aim of which is to support the head of the unit in achieving the goals and objectives through a systematic evaluation of management control and operations consulting (Ustawa, 2009). It is an audit free from the limitations of, which could potentially greatly reduce the scope and effectiveness of auditor’s research, as well as its subsequent reports, including the results and conclusions (Moeller, 2009). According to L.B. Sawyer internal audit derives from a good accounting skills, rounded-in profession-oriented management. At one time, internal audit concentrated on certifying the accuracy of financial data. Currently it provides services that include testing and evaluation of both the control and the whole

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business of public and private. It is an independent institution inspecting inside the company and providing analyses, evaluations, recommendations, and information on the tested structures and activities (Adams and oth., 2012).

According to K. Czerwinski (2005) internal control are all activities within the enterprise control systems. Hence, the main tasks of the internal audit are following:
- verifying compliance the information about the results of logistics activities with reality,
- conformity assessment of the implementation process of the regulations, ordinances and procedures,
- indication of ways of improving the activities implemented in the field of logistics,
- improvement and simplification of logistic processes,
- inference and implementation of solutions that improve the cost efficiency of logistic processes,
- evaluating efficiency, effectiveness and efficiency of the management control system,
- controlling the activities of organizational units for compliance with applicable internal, external and corporate regulations.

Moczydłowska W. (2004) argues that internal control is a system of early warning of the occurrence of adverse events in the company. Important in this approach is the fact that a quick notice irregularities in the operation of logistics enterprises, due to the functional connections, allows for adjustment of processes. In contrast, B.R. Kuc (2002) calls the internal control process initiated by the supervisory board, the management, general management or other employees whose aim is to provide information about the effectiveness and efficiency of operations, reliability of financial reporting, compliance with the law.

There are many differences between internal control, internal audit and external audit, which are presented in Table 1. Seemingly they may seem similar to each other, but after a careful analysis it is possible to see that these are separate activities undertaken in relation to the entity that involve certain consequences.

<table>
<thead>
<tr>
<th></th>
<th>Internal control</th>
<th>Internal audit</th>
<th>External audit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aim</strong></td>
<td>Search deficiencies or inconsistencies affecting the functioning of the company</td>
<td>Analysis of the management system in the company and whether its objectives are realized</td>
<td>Evaluation of enterprise management system</td>
</tr>
<tr>
<td><strong>Role</strong></td>
<td>The detection of the causes of irregularities</td>
<td>Focus on improving the functioning of business processes</td>
<td>Focus on collecting and analyzing evidence from the past</td>
</tr>
<tr>
<td><strong>How it works</strong></td>
<td>It works after the fact</td>
<td>This prevents indicates the potential risk</td>
<td>It works after the fact</td>
</tr>
<tr>
<td><strong>Impact on the improving</strong></td>
<td>Small</td>
<td>The main component</td>
<td>Negligible</td>
</tr>
</tbody>
</table>

Internal audit is a tool to diagnose the functioning of the organization in an independent, objective and systematic way (Rogala, 2011). This process uses the available methods and research techniques, indicates abnormalities in all areas of the company, analyses them, evaluates and leads to their elimination, which improves the functioning of the entire company (Jędralska, 2005). Conducting internal audit stages usually takes place according to a certain pattern (Fig. 1).
It is also an independent institution inspecting inside the company and providing analyses, evaluations, recommendations, and information on the tested structures and activities. On the basis of risk analysis internal audit examines and evaluates business processes and efficiency and compliance of internal controls improving its security (Szejniuk, 2013).

The role of audit in the logistics enterprise is to discuss with the management objectives, responsibilities, priorities, constraints, and the perception of risk, conduct a careful, independent assessment of the safety, reliability and effectiveness of management arrangements, considering the factors affecting such arrangements, discussion of results, conclusions, and orders, and facilitate managers to find a way to resolve the current situation, the performance of their duties and to establish solid foundations for future action (Wine, 2008). Through the role of internal audit is meant to obtain information that will check the validity of the decisions made by management.

Achieving positive outcomes is also subject to the rank and level of independence of the organization, which will have internal audit unit and the competence of the audit team filler task. The main effects of internal audit, are as follows:
- improvement of the organization,
- to create and support actions to improve logistics processes,
- improving the efficiency of the logistics processes,
- improving the quality and economy,
- supporting the implementation of strategic objectives and budget,
- operation of the company in accordance with the rules and procedures,
- generating the added value,
- ensuring best practices in management, accounting and financial control,
- proposing corrective measures and their implementation.

3. **CASE STUDY**

Practical research (based on Dulacz, 2014) associated with conducting internal audit was carried out in a transport company based on the stages shown in Fig. 1, taking into account the specifics of the company (Chaberek, 2003).

An example of an internal audit was to verify the compliance of the information about the results of logistics activities with reality, conformity assessment of the implementation process of the regulations, ordinances and procedures, identify opportunities to streamline operations implemented in logistics, evaluation and assessment of the objectives of the mechanisms of control activity. Important
The methodology of the case was the selection of appropriate indicators and measures for nine basic processes (Twaróg, 2005). In the audited company offering comprehensive services for the transport of shipments from the sender to the final recipient analysed the performance indicators of individual operations based on the exemplary cross-docking terminal of an Silesian company. The terminal performs its processes for about three thousand shipments a day. Basic indicators are the average of all completed activities within a week, and their values were developed for eight consecutive weeks in 2014. Last indicator has been designated on a monthly basis, it’s value is the average of all completed activities during the entire month which was determined for two consecutive months 2014 of research. There were together nine indicators analysed and their significance are presented in Table 2.

**Table 2.** Analysed indicators and their characteristics

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Timeliness of orders (TO)</td>
<td>Percentage of the number of orders executed on time to all accepted in a given day. Specifies the punctuality of service from the date of order to delivery to the customer shipping.</td>
</tr>
<tr>
<td>2.</td>
<td>Delivery receiving to the terminal (DR)</td>
<td>Percentage of shipments received to the terminal until the limit on the total number of imported shipments. Time limit depends on the departure time of line vehicles to other departments and from the time that should be devoted to handling operations associated with loading and unloading of the loads transported.</td>
</tr>
<tr>
<td>3.</td>
<td>Timeliness of shipment routes (TSR)</td>
<td>Percentage of routes shipped on time in relation to the total number of shipment routes.</td>
</tr>
<tr>
<td>4.</td>
<td>Timeliness of receiving routes (TRR)</td>
<td>Percentage of routes arrived on time to the branch target in relation to the total number of arrival routes.</td>
</tr>
<tr>
<td>5.</td>
<td>Dispatch shipments from the terminal (DS)</td>
<td>Percentage of shipments exported from the terminal to a fixed time limit for all dispatched shipments. Time limit was dependent on the planned hours of arrivals inter-terminal routes and since what needs to be couriers for delivery and pick up shipments from customers and return to the branch before the scheduled time of pick up shipments to the terminal.</td>
</tr>
<tr>
<td>6.</td>
<td>Partial shipment without reloading at shipment terminal (PSST)</td>
<td>Percentage of partial shipments to 24 pallets that route vehicle transports from the customer to the shipment terminal where they become a subject to manipulative operations.</td>
</tr>
<tr>
<td>7.</td>
<td>Partial shipment without reloading at delivery terminal (PSDT)</td>
<td>Percentage of partial shipments to 24 pallets that route vehicle transports from the customer to the delivery terminal where they become a subject to manipulative operations.</td>
</tr>
<tr>
<td>8.</td>
<td>Timeliness of deliveries (TD)</td>
<td>Percentage of shipments delivered to the recipient in accordance with the deadline for the number of all consignments to shipments on a given day. This ratio does not include the disruption caused by the client.</td>
</tr>
<tr>
<td>9.</td>
<td>Damage and loss of shipments (DLS)</td>
<td>Number of total recorded damage and missing shipments caused by the fault of a logistics operator per 1,000 waybills from both shipments and deliveries.</td>
</tr>
</tbody>
</table>

Source: Own elaboration based on [Dułacz]
The indicator in the first month of the DLS was at 0.005 and the second month at 0.007. Assuming 3000 shipments per day, this means an average of 15 damaged and / or missing shipments per day in the first month and 17 shipments per day in the second month. Other ratios are shown in figures 2 and 3.

![Graph of indicators TD, TO, TSR and TRR](image1)

**Fig. 2.** Values of indicators TD, TO, TSR and TRR during 8 consecutive weeks

*Source: Own elaboration based on [Dułacz]*

![Graph of indicators PSOT, PSDT, DR and DS](image2)

**Fig. 3.** Values of indicators PSOT, PSDT, DR and DS during 8 consecutive weeks

*Source: Own elaboration based on [Dułacz]*

It should be noted a clear link between the implementation of the order and the timeliness delivery as well as arrival punctuality and timeliness of routes expedited (Fig. 1), which indicates a small share of other factors in the process of transport (congestion, etc.). It might be suspected that the untimely expedition of routes to all consignments carried under it have not arrived within the client or not timely received from him. Therefore shows clearly that the indicators TD and TO are derivatives of indicators TSR and TRR. These indicators are also dependent on the quality of the transport process and its perception by customers affecting their satisfaction with the service provided. The higher the quality of indicators than also customer satisfaction is higher. It is therefore necessary to take decisions and actions aimed at achieving the maximum values of up to 100% (according to the definition of the indicator).
In the case of the indicators presented in Fig. 2 there exists a constant difference (regardless of the analysed period) between all shipments exported from the terminal and to the arrivals to a fixed hour, and partial shipments.

The characteristic values of the indicators suggest the downward trend because it seems necessary to make a decision and countermeasures against further decline in their value. Therefore, guided by the principle of rationality it is also proposed to introduce the following measures aimed at streamlining and improving the quality of processes presented in Table 3.

**Table 3. Activities aimed at improving the values of indicators**

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Possibilities of improving indicator’s value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>(TO)</td>
<td>determination of a specific time of printed waybills to receive orders corresponding transfer to carriers, daily settlement of carriers from the implementation order realization and causes of irregularities,</td>
</tr>
<tr>
<td>2.</td>
<td>(DR)</td>
<td>negotiate with target customers with highest number of delays earlier hours of shipments receiving, promoting clients who do not detain vehicles during loading, improvement of technological equipment at delivery zone, branches receiving information about the recipients that require vehicle with a lift.</td>
</tr>
<tr>
<td>3.</td>
<td>(TLS) (TLR)</td>
<td>daily controlling the amount of delayed vehicles line, consider the possibility of implementing additional positions in order picking area of deliveries, introduction of a different schedule which would take into account the time windows of supplies from target key customers or an additional route</td>
</tr>
<tr>
<td>4.</td>
<td>(DS)</td>
<td>harmonize the start time courier deliveries for shipments to receive, improvement of technological equipment in dispatch area, increasing the terminal area, usage of mobile ramps during rush days of shipments (eg. before Christmas etc.) informing the recipients which require a vehicle with a lift</td>
</tr>
<tr>
<td>5.</td>
<td>(PSOT) (PSDT)</td>
<td>percentage filling of vehicles research rational application of the LIFO and FIFO principle on the vehicle informing the recipients which require a vehicle with a lift</td>
</tr>
<tr>
<td>6.</td>
<td>(TD)</td>
<td>date change in orders for shipments after midnight, full truck load shipments-clock customer during rush days, application monitoring system roads, and prioritization of selected routes.</td>
</tr>
<tr>
<td>7.</td>
<td>(DLS)</td>
<td>working with customers to improve the quality of transport packaging, conducting Kaizen in order to eliminate of damage and losses causes, introduction of elements of poka-yoke on the sorting line in order to eliminate the factor of human error, accurate verification of documents and transport packaging.</td>
</tr>
</tbody>
</table>

*Source: Own elaboration*
4. CONCLUSIONS

Internal audit includes examination and evaluation of the adequacy and effectiveness of the internal control system, risk management and management unit, in particular:
- review of established internal controls and the reliability and accuracy of operational, management and financial information,
- assessment procedures and practices of preparing, grading and presentation of financial information,
- assessment of compliance with laws, regulations and the entity's internal programs, policies and standards established by competent authorities,
- assessment of the security of property units,
- assessment of the efficiency and economy of use of the entity's resources
- an overview of programs and projects to determine compliance with the planned operation of the unit results and objectives,
- assessment of the alignment of the individual to the previously presented the recommendations of an audit or inspection.

According to B. Kroker (2006) the audit should provide information about the possibilities and directions of improving the current situation in the system of logistics enterprises and in terms of the processes implemented in this system. Issued recommendations and recommendations should indicate the processes in which it is possible to reduce or rationalize logistics costs, raising the level of customer service (Sliwczyński, 2007) which was shown on an exemplary case study.

Abstract
The paper presents a theoretical analysis of issues related to internal audit carried out in manufacturing and service companies. The research part is dedicated to the analysis of the causes and actions to improve operational processes carried out on the basis of the results of the internal audit of logistics service provider located in the Silesian province. Basing on analysis of the internal audit, nine key operational processes selected which significantly affect the quality of logistics customer service. Calculated values determined measures and indicators of selected processes are characterized by specifying the manner and frequency of their designation and became the basis for the process of controlling for the research subject. For each indicator the results achieved are presented, which became the basis for future decision making in logistics processes quality improvement.

Keywords: controlling, logistics processes, internal audit

Podejmowanie decyzji na podstawie audytu wewnętrznego w zakresie controlling procesów logistycznych

Streszczenie
W artykule przedstawiono analizę teoretyczną zagadnień związanych z audytem wewnętrznym przeprowadzanym w firmach produkcyjnych i usługowych. Część badawcza poświęcona jest analizie przyczyn i działań w celu poprawy procesów operacyjnych realizowanych na podstawie wyników audytu wewnętrznego usług logistycznych operatora, mającego swą siedzibę w województwie śląskim. Opierając się na analizie audytu wewnętrznego, wybrano dziewięć kluczowych procesów operacyjnych istotnie wpływających na jakość logistycznej obsługi klienta. Obliczone wartości pozwoliły na scharakteryzowanie mierników i wskaźników wybranych procesów, poprzez określenie sposobu i częstotliwości ich wyliczania i stał się podstawą procesu sterowania w badanym podmiocie. Dla każdego wskaźnika przedstawiono osiągnięte wyniki, które stały się podstawą do podejmowania decyzji w przyszłości zmierzających do poprawy jakości procesów logistycznych.

Słowa kluczowe: controlling, procesy logistyczne, audit wewnętrzny

LITERATURE