ORGANIZING COMMISSION SALE: CONCEPTUAL MODEL OF THE CORRESPONDING INFORMATION SYSTEM

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Received: 31. 10. 2014
Accepted: 5. 2. 2016

Preliminary communication
UDC 658.8:004

The sale of commissioned goods is an old, well-known concept although its implementation and automation in the context of the modern information systems in enterprises is not all that simple given that it implies appropriate contractual arrangement, and organizational and informational interaction between the enterprises involved in the commission sale. Notwithstanding the explicit and standardized legal framework for the commission sale system, its organizational realization and especially its information system design, has not been formally standardized. As a result, this creates a new issue and poses a challenge to each specific commission sale case. In view of the above, this paper provides a complete, functional and verified conceptual model of cooperative interaction between two enterprises in a spatially distributed system of a developed commission sale, supported by the ICT (information-communication technology). This model in practice should yield good results as it ensures optimal position to both the owner (Principal) and the seller (Commission Agent) of goods, from the point of view of competences, liability and risks related to the goods intended for sale.

Keywords: commission sale, enterprises interaction, information system, models, organizing, principal and agent.

1. INTRODUCTION

Acting as business systems in the competitive market, the suppliers and buyers of goods intended for further sale have been trying to define and

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operationalize different types of business cooperation in which all participants would be given a chance to make a profit by sharing between themselves the difference between the real buying price and the selling price effected in the market. The common traditional model of cooperation is characterized by rebates and deferred payments for the buyers of goods intended for further sale. But, in the time of recession and the chain debt crisis, this model becomes weak and it slows down the activities related to the supply and demand because it involves a number of business risks. However, it is possible to introduce some new conditions in the system of the so-called "commission sale" or "sale on commission" that would be favorable and acceptable to both sides.

According to the definition (Rocco, 1993), commission sale is a type of sale which involves a commission agent and his principal. Commission agent is a company acting as an intermediary and it operates on its own behalf, but for the account of the principal as manufacturer or owner of goods. The commission agent sees his interest in such cooperation primarily in the fee or commission, which he receives in return for a successful sale of the principal's goods. As the contemporary economics-based approach, agency theory (Ghosh and John, 2000; Caers et al., 2006) considers the interaction between the two companies (or persons), where first of them (principal), mainly for the reason of lower costs, hires another firm to perform a specific task or service on their behalf. Principal-agent relationship in such an arrangement involves certain delegating of authority in decision making to the firm-agent (Jensen and Meckling, 1976).

A specific feature of the commission sale lies in the fact that the goods stored in the commission agent's warehouse or at his points of sale are in fact owned by the principal until the moment they are sold. A commission deal is closed by concluding a commission sale agreement, which determines the selling rights, the timeframe, the amount of commission, and other important issues such as those cited in a simple example (Commission Sales Agreement, Biztree, 2014). Agency theory based models emphasizes contracts that contain explicit incentives for performance of the agents (e.g. in Casadesus-Masanell and Spulber, 2010). Regarding the basic design of contract, with the aim of reducing the conflict of interests of both sides, it is noteworthy that the main principles of contract design were identified and formulated by Milgrom and Roberts (1992).

The paper examines general requirements for successful *organizational integration* into the commission sale (principal - commission agent) system and conditions for its effective functioning: the interoperability levels, possible risks

and specific opportunities. The main and complex problem related to the optimization of the sales commission system lies in finding design solutions for organizational links and information systems (IS) in two enterprises that are teamed up to satisfy their interests. To that end, the authors have created a conceptual design and proposed a model for their interaction at the organizational, processing and information system level, based on the proven capabilities of the ICT and ERP (enterprise resource planning) systems developed so far. The paper discusses and uses the experiences of practical implementation of the model designed and presented here. The design and implementation of the system is a step further from the classical options of the commission sale based on the enterprise (Principal) - individual (Agent) relationship in that it introduces practical functioning of the enterprise (Principal) – enterprise (Agent) commission sale model.

2. POSITIONING OF THE COMISSION SALE PROCESSES

Traditionally, the commission sale model refers to a company that engages individuals outside the organization, most often for the purpose of selling insurance, cosmetics, food products and additives, real estates and the like. The agent (sales representative) receives compensation or commission for doing his job. The main topics that are theoretically discussed in the research of this type of sale cover the question of optimal compensation to salesmen for their sales results, i.e. the interrelations in the principal-agent-buyer chain. In his work Kurland (1996) explores the problem of ethical attitude of agents towards clients, basically arising from two aspects: "moral hazard" (one party can take actions which affect both parties but actions which the other party cannot monitor appropriately) and "adverse selection" (one party knows things relevant to the transaction unknown to the other party). Similar problems were dealt with by Larkin (2014) and also by Zietz and Newsome (2001), who examined the processes of real estate sales with regard to commission rates. They confirmed and identified as a problem that „agents do not act in the best interest of their clients because of the institutional structure of sales commissions".

In his well-known paper, (Anderson, 1985) examines the decisions on integration of sales functions, specifically the decisions to engage own employees in direct sale rather than engaging sales representatives (agents). However, one of the assumptions that supports the argumentation that engaging the work force in direct sale has flaws, is based on the potential requirement of traveling to another district in order to sell. The more present this requirement is, the more likely the use of the commission sale model is.

The commission sale is often considered as an integral part of the chain that creates new values. It is also considered as an option in the optimization and rationalization of the resources management model in the distribution chain. The Dell company is a traditional example of an indirect distribution channel for the PC industry which includes suppliers, manufacturers, distributors, retail sale (and resellers) and, finally, buyers. It has been criticized for the high inventory costs and lack of responsiveness (Kraemer, Dedrick and Yamashiro, 2000). In practice, Dell has replaced this chain with a solution that introduces a new business model based on selling PCs directly to the final customer. Furthermore, the research conducted on the sample of independent sales agencies (Anderson, Lodish, and Weitz, 1987), addressed the problem of *resource allocation behavior* of distribution channel members, and established to what extent the factors such as: financial portfolio variables, features of channel relationship, managerial variables - impact the resource allocation decisions. The features of the commission sale model appear as an important part of these variables.

The most common form of distribution channel is the one in which the manufacturer of a product or service enters the market via channel members which are independent entities (Stem and El-Ansary 1993). In these circumstances, the manufacturer can be considered a "principal," which depends on (and gives limited authority to) a representative known as an "agent" in order to bring a product or service closer to the point of final sale (Pratt and Zeckhauser, 1985). Ross, Anderson and Weitz (1997) explored the principal-agent relationship in a distribution channel with regard to *performances*, and identified the importance of the „causes and consequences of perceived asymmetry of commitment to the relationship“.

The present-day distribution as a set of activities within the process of transfer of goods from the point of manufacture to the point of delivery to buyers includes options that are different from various marketing (trade) distribution channels. In the modern economy, a manufacturer rarely sells his own products directly to the buyer (Šamanović, 1999, p. 25). Hence, intermediaries or marketing channels, as institutions (agents) performing the function of the trade of goods in the market, have a significant role.

Manufacturing enterprises choose their marketing distribution channels taking into consideration influential factors, such as: the strategy of appearance in the market and the relevant features related to the manufacturer, product, consumers and agents (DHL, 2013; Šamanović, 1999, pp. 28-29). A well created combination of distribution channels ensures a wider range of sale,

fewer expenses and efficient control of distribution. Relationships in the channel, especially between suppliers and intermediaries (Weitz, B. and Qiong Wang, 2004), play an important role. The participants in the distribution may be categorized in the manufacturing enterprises, trading enterprises and those providing trading services. The latter category also includes trading enterprises which enhance distribution, i.e. commercial services such as: commission agencies, trading agencies, specialized distribution enterprises, etc. (Šamanović, 1999, pp. 48-49). The sale of goods based on the principal-commission agent model may also involve a support of trading agencies or specialized distribution enterprises. Such enterprises usually offer the manufacturer more than just a service of commission sale.

The commission sale system has its advantages and a manufacturer may use it as a base of his distribution channel. However, for it to be successfully realized it is necessary to resolve certain problems related to the organizational interoperability, primarily in the domain of information systems. Generally, a principal strives to retain strict control over the goods he has issued for the sale on commission, while a commission agent avoids any conditions imposed on him by the principal and wants to be entitled to free manipulation with the goods at his points of sale. This should not represent a problem if the information systems of both the principal and the commission agency are well integrated, but most often this is not the case. Grossman and Hart (1986) provide very good research results and understanding of the situation where two organizations enter into a relationship in which assets will be used to generate income.

Given the problems arising from the two partly opposed interests (the principal as owner and the commission agent as seller) and possible uncooperative actions, it is necessary to design an adequate IS system as the major mechanism of control and collaboration. This is something that needs to be done before taking a decision on launching a commission sale.

3. ASSESSMENT OF PRECONDITIONS FOR SUCCESSFUL INTEGRATION INTO THE COMISSION SALE MODEL

Our intention is to explore and focus on the new ways of organizing commission sale. In addition to the commission sale model, the development of ICT solutions in business has also incited development of new devices in terms of organization. The proposed framework discussed below shifts the focus from the company's relationship with its salesmen i.e. individuals to the relationship between two companies. The ERP systems support establishment of

characteristic organizational networks which act harmoniously within the chain that creates new values. Such organizational forms of independent companies are also considered as virtual organizations, as described in, for example Lethbridge (2001), and Hemilä (2002). Having introduced commission sale, a transformed organization provides two or more interconnected companies with the new plan for managing resources, rationalization and optimization with the aim to achieve better results in the process of creating new values and, consequently, more benefits.

When determining the preconditions for a successful creation and functioning of the commission sale system it is necessary to take into consideration the state of interoperability of an enterprise, and to evaluate the cost-benefit indicators.

3.1. Interoperability of enterprises

Although adopted from the computer science (IEEE, 1990), this term provides sufficient general description of interoperability as the ability of two or more systems or system components to exchange information and use the information that has been exchanged. According to Kubicek and Cimander (2009), the four levels of interoperability include: technical level (objects: signals), syntactic level (objects: data), semantic level (objects: information) and organizational level (objects: processes) of interoperability. For the purpose of description and assessment of the level of interoperability, the maturity model for interoperability (MMI) of organizations could be used, as shown in Guédria et.al (2009), as well as Clark and Jones (1999).

When designing processes intended for the needs of the cooperation of enterprises in commission related operations, it should be assumed that both sides are involved in the processes, which implies resolving the question of control and ownership of processes. Given the definition of inter-organizational workflow and process management, such cooperation requires creation of inter-organizational IS and inter-organizational information flow. The development of the system requires interoperability of functional components and use of technology standards, such as XML, SOAP, WSDL, UDDI, WSI; as noted in Klischewski (2004).

Certain authors claim that the interoperability in business must also address the issue of organizational culture and includes certain steps which contribute to the creation of a good climate or environment favorable to the cooperation which reaches beyond organizational barriers (Bossche, 2013, pp. 50-51)

Failure to integrate due to incompatible organizational cultures is the most common reason for failed mergers and acquisitions (Schuler and Jackson, 2001). The results shown in Deloitte & Touche (2002) indicate the most important reasons for failure of mergers and acquisitions: (1) ignoring people and culture, (2) slow integration, (3) lack of communication, and (4) failure to define roles, responsibility and structure precisely. Furthermore, according to Sutton (1999), the failure to achieve interoperability results from the inability of the organizational network and, consequently, of the two-enterprise system, to achieve the specific interoperable levels in terms of the speed of transfer of data, the quality of service and the reaction time.

In addition to the organizational level of interoperability, the implementation of process-oriented technologies which enable interoperability of information systems, such as workflow management systems, application integration suites and process portals, creates substantial costs because it requires redesigning of the business processes and adjusting to the existing information systems (Mutschler et al, 2005). For this reason efforts are being made to create an evaluation framework in order to assess costs and benefits resulting from the implementation of the process-oriented software technologies. Of course, interoperability should be understood as a state of a certain level, whereat it is not perfection that is required but rather a reasonable extent of sharing and inter-enterprise exchange of information (Gluskho and McGrath, 2005; Perzanowski, 2009).

3.2 Assessment of risks of and benefits from the implementation of the commission sale model

The basic model used in risk assessment is usually based on two parameters. The long-term risk cost (RC) is measured by the expected value (Condamin et al, 2006, p. 20):

$$RC = (Frequency) \times (Severity) \quad (1)$$

Frequency or probability refers to the chances of occurrence of harmful events or losses, whereas severity refers to possible costs caused by harmful events. Such evaluation is applied often, so much so that it is built in, for example, the foundations of the calculation of risk of portfolio bookings (Schuermann, 2004). Though this paper does not harbor ambition in precisely calculating the risk, it is aimed at qualitatively describing risky situation involved in the commission sale model.

In the widest context of risk analysis, including various categories of risk that a company's business operations are exposed to, the commission sale model may be analyzed on the example of the *asset related risks*. Namely, final products fall under inventory and inventory is the key component of current assets (Koch, 1943; Baletić, 1996) of large manufacturers and trade companies. The changes in the state of inventory go along with the fluctuations in the aggregate current assets. Quantitative presentation of usable models to calculate risks of holding the asset during a certain time period is given, for example, in Culp (2003).

In line with the solution to the possible virtual organization in the chain of values, and with the commission sale in particular, here are *the desirable preconditions* which make this model a rational solution to organizing:

- Principal (P) has means of transport, i.e. adequately developed distribution, in a certain area, but does not have its own points of retail sale there;
- In the same area, agent (A) has its points of retail sale and also other required resources, but they are not used to the fullest;
- Companies P and A are willing to cooperate in terms of sale, which implies their readiness to implement appropriate ICT solutions, agreements on commission rates, etc.

By way of the new organizational model, Company P makes its presence on the territorial market, while company A makes profit through commission fees.

Before entering into the commission sale system, both the Commission Agent and the Principal should apply appropriate analytical techniques, e.g. the popular SWOT analyses. By analyzing SWOT elements (strengths, weaknesses, opportunities and threats) it is possible to predict cost effectiveness and risks involved in this system, i.e. the required strategic steps, as found, for example, by Cadle et al (2010).

In the sense of SWOT analysis, we detect strengths and weaknesses, as well as the opportunities and threats to which the Principal and the Commission Agent are exposed, once they have introduced the model of commitment, the so-called commission sale model (Table 1). When deciding whether or not to accept the commission sale model, enterprises must analyze the overall ratio between their own estimated benefits and potential losses.

Table 1. SWOT analysis elements for the Principal - Commission Agent arrangement.

Principal	***Commission Agent***	***Principal***	***Commission Agent***
Strengths		**Weaknesses**	
• No storage cost; • No marketing costs; • No selling process costs.	• No investment in goods required.	• The Principal bears the costs of delivering his goods to the Commission Agent.	• Should ensure storage conditions for someone else's goods; • Marketing costs.
Opportunities		**Threats**	
• Fewer barriers to conquering new markets.	• Relative freedom of setting prices for the sale of someone else's goods; • Possibility of returning unsold goods without compensation.	• Goods are delivered to the Commission Agent without compensation; • There is (generally) no continuous control of the state of stocks at the Commission Agent's warehouse; • The Principal has no saying in the Commission Agent's business operations.	• The Commission Agent takes responsibility for someone else's goods; • Obligation to return unsold goods; • (Possible) unconditional acceptance of the Principal's conditions regarding the process of sale.

4. MODELLING THE COMISSION SALE SYSTEM AND PROCESSES

The principal-agent model according to Stauvermann (2004), contains the following main ingredients: an available surplus for the agents; a conflict of interests between agents and principals and asymmetric information between agents and principals, as well. Agency theory assumes that the principal-agent relationships are generally characterized by a conflict of interests of the principal and the agent (Pontes, 1995; Sundaramurthy and Lewis, 2003). In modeling such strategic situations, unavoidable is formal apparatus of the game theory, as shown by Gardner (1995), Rasmusen (2001), Dutta and Radner (1994), and others. In an usual simple model, interactions are often represented by the game-tree while the game is with asymmetric information. Presuming that the agent may put low effort or high effort ($e_{L,H}$) and receive some money (m) in the process (Gardner, 1995, pp. 272-273), the principal as *player 1* has the utility function:

$$U_1 = R_1(e) - w_2(e), \quad (2)$$

where R is the revenue the principal gets and w is the agent's wage. The agent has the utility function:

$$U_2 = m - e \quad (3)$$

A more complex formal principal-agent model of dynamic nature was proposed by Holmstrom and Milgrom (1994) and explored further by other authors, who analyzed the extent of gain, achieved by the participants in the interaction. For example, a salesman with the status of employee has been compared to a freelance agent. Likewise, Chung, Steenburgh, and Sudhir (2013, p. 24) propose a formal framework and provide a calculation related to the problem of *"how the sales force responds to a compensation structure involving many components of compensation (salary, commissions, quota and bonuses at quarterly and annual frequencies)"*.

Models of game theory provide an insight into this strategic interaction, and offer the possibility of useful analyses. However, when it comes to sales commission, our main point of interest is the design of organizational interaction. Therefore, for the purpose of presentation and analysis of a two-enterprise system interaction, we use the system-dynamic model showing mutual influences of relevant variables, and later the influence it exercises on the business process model.

4.1. Dynamic model of the commission sale system

According to some authors (e.g. Wolstenholme, 1999), whenever using system dynamics to address a certain problem, one should include the qualitative system dynamics. As reported by Senge (1990), the qualitative approach is important if we want to categorize typical behavior patterns in the system: intensifying circles, stabilizing circles, etc. Notwithstanding the skepticism expressed by some authors towards the potential of the qualitative system dynamics models (e.g. Smith, 2004), the critical views of the effectiveness of the quantitative model are also being developed (e.g. Coyle, 2000).

The diagram in Figure 1 shows the cause-and-effect relationship between the Agent's and the Principal's state of stock as a function of the sale of goods. To sum up, following the concept of the systemic dynamics, the Commission Agent and the Principal are engaged in a flexible dynamic process of managing

stock and selling goods and they receive their respective feedback. The objective of the goods supplier who is holding in stock the goods intended for further sale is to reduce his stock and harmonize its amount dynamically with the needs of the market. The objective of the buyer of the goods intended for further sale is to keep minimum amount of goods at his warehouse thus ensuring minimum risks, and to create conditions for the dynamic replenishment of someone else's goods with no risk involved. *Independent variables* of the system are selling capacities, while *dependent variables* are quantities ordered, quantities on stock and quantities sold. The problem is how to design the Principal's IS to ensure successful management of the system with minimum costs.

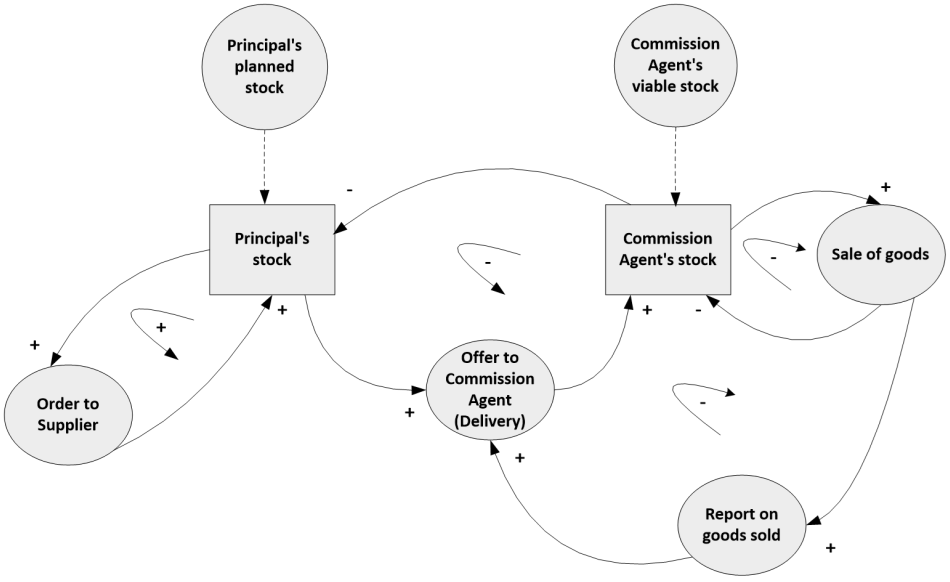

Figure 1. Diagram showing cause-and-effect relationship between the commission sale systems

In terms of stock management, *the position of the Commission Agent* may be analyzed from the point of view of present-day rational approaches, such as: optimization of the order (e.g. EOQ), Just-in-Time, Lean Management. The economic order quantity model (EOQ), which is accompanied by the related economic manufacturing quantity model (EMQ), includes rationalization of stock management by determining optimal quantity of a (single) order. By employing simple assumptions, an order is determined so as to minimize the cost of stock. This model has been analyzed in different business environments,

as shown in Schwarz (1972). However, the fundamental assumptions of the calculation of optimal order in the commission sale model, as for instance in Jacobs and Chase (2008, pp. 366-367), do not apply because the commission agent, pursuant to the agreement, does not have to pay for goods right away and the costs of the order and delivery can be harmonized more precisely, etc.

Notwithstanding the fact that the original idea for the method of high discipline and process orientation, i.e. the Just-in-Time method (Goddard, 1986) dates back a long time, it became first applied in the 1950s, as an integral part of the Toyota production system. It is based on the concept of the coordination of stock management with the management of production and supply. It is aimed at maintaining minimum level of stock, which must be made available whenever needed or in demand. Reduction of the stock level also unties capital which can then be invested elsewhere.

Lean management denotes orientation of an enterprise towards elimination of waste from processes (Pojasek, 2003), which results in the reduced cost and time needed for the execution of complex processes. Various elements considered as waste also include: over-production, excessive inventories and transportation. These very elements are also crucial for the functioning of the commission sale model. There is a rationale for the appropriate kind of integration of the *lean management* and *Just-in-Time* approaches into the commission sale model, from the position of the Principal as well as from the perspective of Commission Agent.

4.2. Model of the commission sale process

The next model that explains the commission sale is the business process model, shown by way of the Business Process Model and Notation (BPMN) (Silver, 2011; OMG, 2011). This model should provide a solution to the issue of optimal organizing and management of the commission sale (Fig. 2).

In line with the earlier observations, the processes in enterprises within the system must have the required degree of interoperability. The process begins with the Commission Agent's request for the delivery of goods. This request is usually made periodically, depending on the customers' demand, the waiting time from the moment an order is placed until the delivery, etc. If compared with the traditional supply process, the Commission Agent is not under obligation to make payment for the goods taken. An analysis of the duration of sub-processes and activities presented in Fig. 2 provides guidelines for enhancement of this inter-organizational set of activities. There are two

problems related to the process model shown in Fig. 2. The first is the question of who generates the request to the Principal for the delivery of new goods (the Principal and/or the Commission Agent).

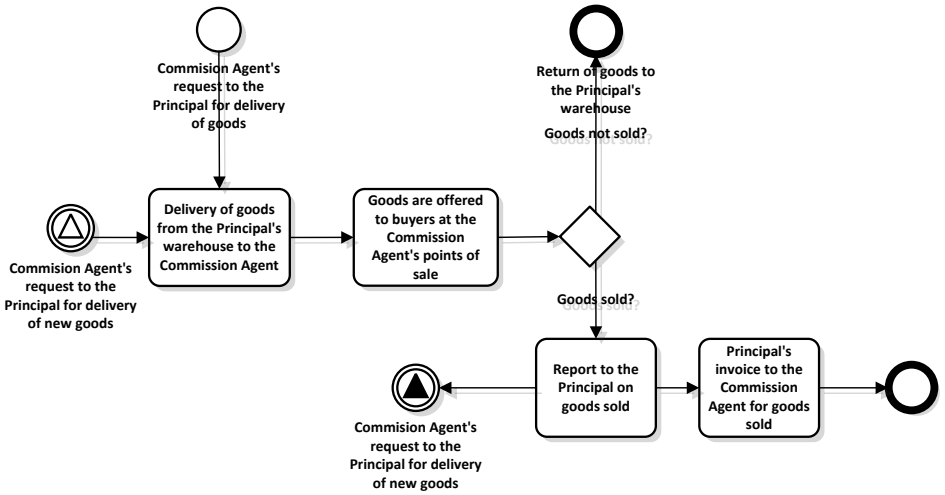

Figure 2. Model of the commission sale process

The second problem lies in the manner, in which the invoice is issued to the Commission Agent for the goods sold in a given period, which may be partial (one invoice per a point of sale) or cumulative (one invoice for all points of sale). These problems demand a solution that involves a substantial support by ICT built-in within the Principal's IS system.

5. CONCEPTUAL IS MODEL OF COMISSION SALE

Based on the models presented earlier, below is a designed conceptual solution of the required information system (Fig. 3).

This model provides an answer from the organizational, as well as from the IS point of view: *how to organize and automatize the commission sale system with a single Principal and one or more Commission Agents of whom each has (P) points of sale.* Principal's suppliers are denoted by (DOB_i; $i=1,...,D$), while Commission Agent's points of sale are denoted with ($PROD_i$; $i=1,...,P$) while ($KSKL_i$; $i=1,...,S$) stands for Principal's warehouses.

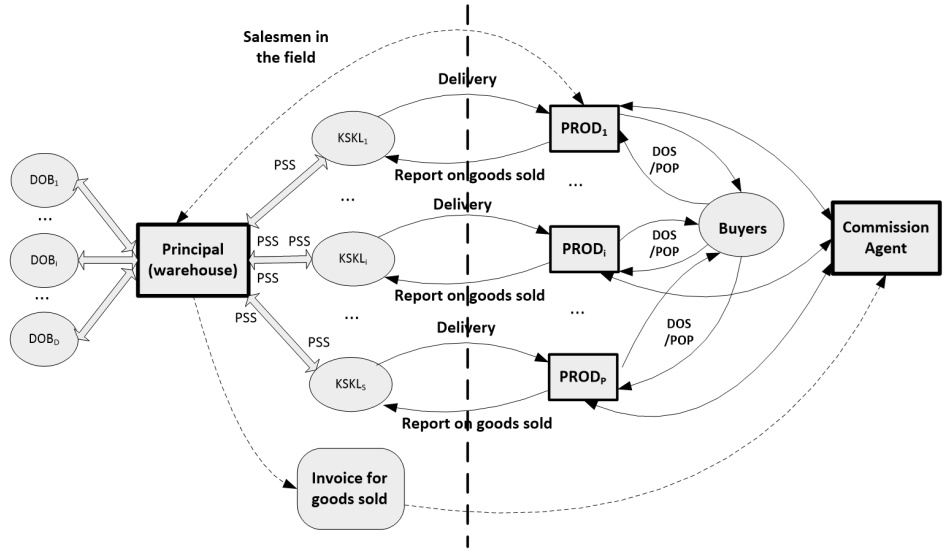

Figure 3. Conceptual IS model of commission sale

As regards the Principal's IS which provides support to the commission sale system, the operational process of the commission sale boils down to several repetitive steps:

- Open (S) virtual warehouses within the Principal's IS, to monitor the inventory at the Commission Agent's points of sale (P);
- Use PSS document (transfer note; between warehouses) to register goods in virtual warehouses (Principal's IS) and deliver them to the Commission Agent's points of sale;
- Use document OTP (dispatch note) to sign off goods from virtual warehouses (Principal's IS) upon receipt of the report that they have been sold by the Commission Agent;
- Issue an invoice to the Commission Agent for the goods sold (integrated invoice: one invoice for all points of sale or partial invoice: one invoice for each point of sale).

Vertical demarcation line in Fig. 3 shows the process integration of the sales systems from Principal and Agent, but also shows their independence at the organizational and information system levels. The implementation of the

Principal's IS model described in this chapter indicates that, if appropriate business application is used, it is possible to establish a very effective system of commission sale with minimum of human resources engaged.

6. IMPLEMENTATION OF THE INFORMATION SYSTEM IN THE COMMISSION SALE MODEL INVOLVING TWO ENTERPRISES – AN ANALYSIS OF EXPERIENCES IN PRACTICE

In the particular case, where the presented commission sale model was applied at around 40 Commission Agent's points of sale, there was no need on the part of the Principal to increase the number of work posts engaged in the commission sale. It is the case of a well-known Croatian company, which imports consumer goods from China and other Asian countries to Croatia, and which based its highly efficient system of distribution of goods to customers for further sales exactly around the model described above. In this company the model described by Figures 1, 2 and 3, has been applied since 2012, and the number of point sales of Agents who are constantly joining the system, is continuously growing.

A noticeable problem in practice, however, is the lack of discipline on the part of the Commission Agent who, following his own business plan, receives the Principal's goods at one point of sale and then relocates them to other points of sale, thinking that it is his internal right to do so and that he is under no obligation to inform the Principal thereof.

As a result, the Principal's business process which was initially well organized and flawless, very soon turns into a chaotic operation that is hard to control. Another problem lies in the summative reporting on the goods sold by the Commission Agent rather than partial reporting by points of sale to which the goods were delivered. This makes it difficult for the Principal to have control over the goods inventory at the Commission Agent's points of sale in a given time.

The abovementioned problems were successfully resolved by applying specific program support integrated into the Principal's IS, confirmed in a number of studies in the subject-matter field (Vidačić, 2005; Vidačić and Brumec S., 2008; Hell, Vidačić and Brumec J., 2013).

The presented model is solved through the software application called TRENISCAR, which has been developed as the complete enterprise resource

planning (ERP) system for small and medium-sized enterprises.[1] Software has been successfully applied and used for five years in the aforementioned company.

Commission sale system is generally also faced with the problem of data transparency in the Principal's and the Commission Agent's ISs. As a rule, the enterprises acting as Commission Agents have their own IS, which is independent from the Principal's IS, but they want to incorporate the Principal's assortment of goods ("own products") into their own assortment. This means that, owing to the design of the integration system, they can change the original codes and names of products into their own intern codes and names, in accordance with their business rules of marking the assortment of goods.

The only information that the Commission Agent may not change is the *product barcode*, since it is vital to the Principal in the process of identifying the product that he sold through his sale system. This criterion is an important precondition for the transparency of information and functioning of the commission sale system when using the model described in the paper.

Such an approach within the integration system must be contracted between the Principal and the Commission Agent before the commission sale process is launched.

Several complex business reports are incorporated to support the commission sale model (Figures 1, 2 and 3) in the context of the TRENISCAR application, which is fundamental for the realization of the commission sale system in the Principal's IS. Among other things, the database of those reports refers primarily to quantitative and financial monitoring of the movement of goods in commission and analyzing the stock in hand of the goods in commission contained in the database of the Principal and the XLS data sheets of the Commission Agent (Figure 4).

[1] TRENISCAR is produced by the company INFOMIB (Zagreb, Croatia).

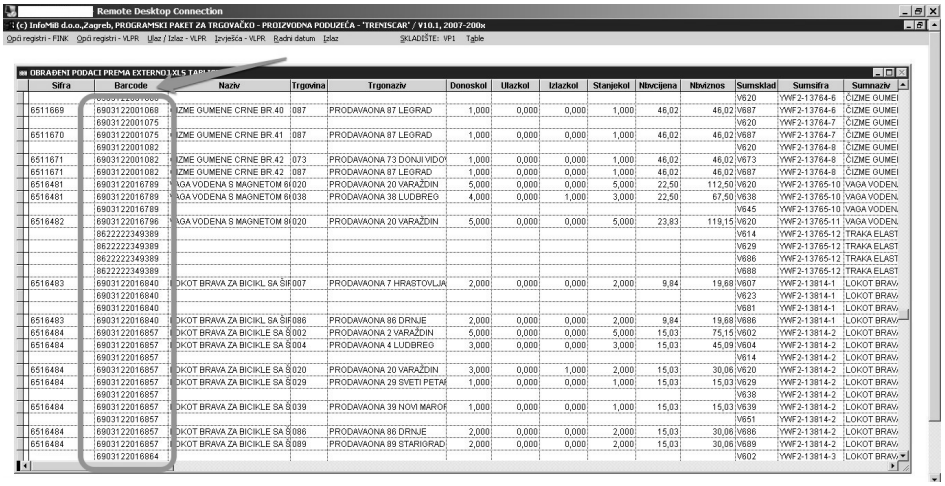

Figure 4. Comparative analysis of the stock in hand for commission from the Principal's database and the Commission Agent's XLS data sheets (TRENISCAR)

Pseudo code procedure for the comparative analysis of the stock in hand for commission between the Principal and the Commission Agent is presented in Table 2.

Table 2. Pseudo code procedure for the comparative analysis of the stock in hand for commission between the Principal and the Commission Agent

Step no. and pseudo code
1. Starting the procedure
2. Entering group code for virtual warehouses at Commission Agent's point of sale
3. Entering date when stocks are compared
4. Opening DBC databases of TRENISCAR application required to analyze data
5. Creating auxiliary database for import of data from Commission Agent's external XLS data sheet containing data on stock in hand (identical structure)
6. Importing data from Commission Agent's external XLS data sheet to the auxiliary database from Step 5
7. Expanding the structure of the auxiliary database from Step 6 to make room for the data from the Principal's database
8. Identifying products from the Principal's database which are located in the Commission Agent's virtual warehouses at the latter's points of sale (key field = Barcode), and entering data into the auxiliary database from Step 7
9. Browsing through the auxiliary database from Step 8, comparing on the screen the stock in the Principal's IS base with the Commission Agent's stock, thus enabling visual control of the data (Fig. 4.)
10. Printing the contents of the auxiliary database from Step 8
11. Exporting the auxiliary database from Step 8 to the external XLS data sheets for further analysis
12. Closing data from the DBC database from Step 4
13. Ending the procedure

One of the serious problems with the commission sale system that the Principal has to deal with is the internal relocation of goods by the Commission Agent from one of his points of sale to another. The problem arises when entering information about the products sold by the Commission Agent and when the new state of stock in the virtual warehouses at the Commission Agent's points of sale has to be updated to this effect.

Figure 5 illustrates a data sheet of a real commission sale system, providing an operative solution to this problem. It is a result of a complex algorithm incorporated in the TRENISCAR application.

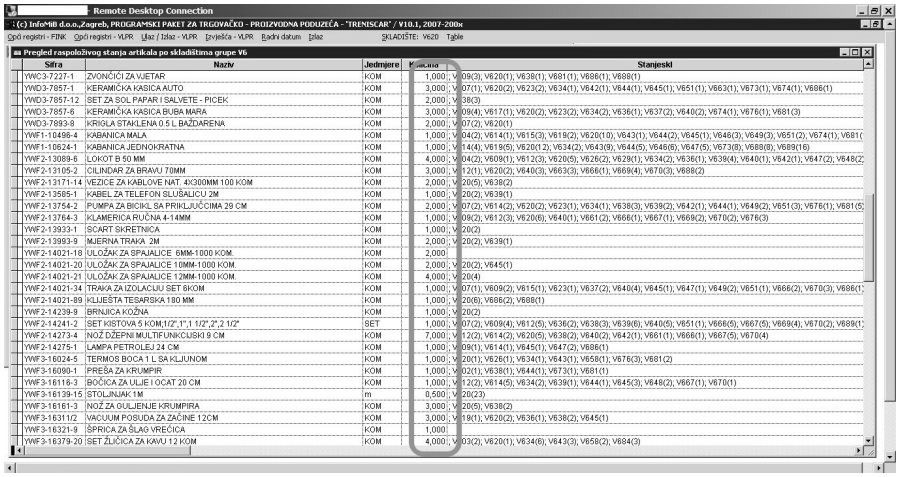

Figure 5. An overview of products available in virtual warehouses at points of sale of the Commission Agent (TRENISCAR application)

Table 3 shows some of the indicators of the successful performance of the commission sale system using the model of two real enterprises interacting since 2012 on the basis of the concept presented in this work. As mentioned in 3.2, certain desirable preconditions for a successful implementation of commission sale through cooperation of two enterprises are met here, given that the Principal in question has no significant costs of delivery of goods to the Commission Agent's points of sale.

The first indicator in Table 3 represents the cost of this concrete delivery to the Commission Agent and it is expressed as part of the total delivery costs. Out of these costs, 26% accounts for the transport cost provided by an external service, and as much as 74% for the transport by own vehicles. Optimization of the delivery system is a specific problem which gets bigger with the growing

number of delivery sites. It is therefore necessary to implement an adequate model capable of generating minimal costs.

The second indicator in Table 3 shows that the Principal attempted to minimize the stock in commission towards the end of the business year, the reason being, firstly, that he needed an insight into the quantity of the goods that had been delivered to the Commission Agent, but remained unsold that year and, secondly, to minimize the risks. The third indicator points at the fact that the Principal in question had significant sales results in just one year with a single Commission Agent and that, consequently, there is potentially a good reason to include additional Commission Agents into the commission sale system. The fourth indicator shows that over 30% of the active assortment of the Principal was included in the commission sale system. The fifth and the sixth indicator in Table 3 point at considerable interaction between the Principal and the Commission Agent in terms of goods movement, transport and IS.

Table 3. An analysis of the commission sale in the reference enterprise of the Principal in 2015

No.	Indicator	Data
1.	Share of total costs of delivery in the aggregate movement of goods	2.37 (%)
2.	Share of purchase value of the goods on commission in the aggregate purchase value of goods on 31 December 2015	3.38 (%)
3.	Share of purchase value of sale through commission in the overall realization of wholesale	6.62 (%)
4.	Share of the number of active products in commission in the total number of the Principal's active products	33.75 (%)
5.	Number of deliveries to the Commission Agent's points of sale	320 (events)
6.	Number of reports from the Commission Agent's points of sale on the Principal's goods that were sold	803 (events)

The brief additional research, conducted in the form of interviews, resulted in the conclusion that the successful commission sale set up in the Principal's enterprise with numerous points of sale of a single Commission Agent, showed no need for additional staffing. A member of the Principal's management was asked the following question: *If one or two new commission agents whose potentials are fairly similar to those of the currently engaged Commission Agent, were engaged in the commission sale system, would it call for an increase in the number of work posts in the area of commission sale?* He answered that such need would probably arise, but only if three or more

commission agents were engaged. Therefore, from the point of view of rational management of resources by the Principal, this confirms the quality and practical applicability of the commission sale model as proposed in this paper.

7. CONCLUSIONS

In terms of organization, the commission sale system is an interesting example of the dynamic interaction between two enterprises (Principal and Commission Agent) sharing the same interest but acting in different roles. Such system is characterized by specific organizational, informational, proprietary, financial and other aspects, which are covered in this paper. By implementing conceptual models presented in this paper, it is possible to set up an effective and rational system of commission sale in a simple manner and in short time, without additional costs of upgrading the functions of the Principal's IS program applications, whose interest is of primary and predominating importance. Based on a high-quality ICT support, the flexible commission sale model presented in this paper ensures real-time independence and flexibility of business operations of both the Commission Agent and the Principal and also the Commission Agent's interventions into the management related activities in terms of protection of ownership rights, if the need arises.

The proposed model may prove particularly useful in the business activities of two enterprises, where the Principal can make his presence on a new (territorial) market by introducing a new type of organization, while the Commission Agent, on the other hand, achieves benefits in terms of commission related revenues and better use of sale resources.

In view of the above, this paper may serve as a concept of and recommendation for organization of a commission sale system in a simple and up-to-date manner on the basis of ICT and IS available to both the Commission Agent and the Principal.

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ORGANIZIRANJE PROVIZIJSKE PRODAJE: KONCEPTUALNI MODEL ODGOVARAJUĆEG INFORMACIJSKOG SUSTAVA

Sažetak

Prodaja dobara uz proviziju je star, vrlo poznat koncept, iako njegova implementacija i automatizacija u modernom informacijskom sustavu poduzeća nije nimalo jednostavna, s obzirom da zahtijeva prikladni ugovoreni poslovni aranžman, te organizacijsku i informacijsku interakciju među poduzećima uključenih u provizijsku prodaju. Bez obzira na eksplicitni i standardizirani pravni okvir sustava provizijske prodaje, njegova organizacijska realizacija i dizajn informacijskog sustava još uvijek nisu standardizirani. Navedeno otvara nova pitanja i postavlja izazove za svaki individualni slučaj provizijske prodaje. Sukladno tome, ovaj rad pruža cjeloviti, funkcionalni i provjereni konceptualni model kooperativne interakcije između dva poduzeća u prostorno

udaljenom sustavu provizijske prodaje posredstvom informatičko-komunikacijske tehnologije. Ovaj bi model u praksi trebao donijeti dobre rezultate te iz perspektive kompetencija, odgovornosti i rizika povezanih uz prodajna dobra osigurati optimalno pozicioniranje vlasnika robe i prodajnog agenta.