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ORGANIZATIONAL STRUCTURE AS A PREDICTOR OF THE SUPPLY CHAIN MANAGEMENT EFFICIENCY

Organizaciona struktura kao prediktor efikasnosti
upravljanja lancem snabdevanja

Abstract

The organizational structure elements are an important predictor of developing an efficient supply chain management, which is the subject of analysis in this paper. The empirical study that was conducted included a sample of 51 companies in the territory of Western Serbia. Their business practices identified the existence of a statistically significant and strong correlation between organizational structure and the determinants of supply chain management efficiency. Within the conducted research, specialization and decentralization stand out as the elements with the greatest impact on improving the quality of products/services, shortening delivery times, resolving complaints more efficiently and reducing costs of the supply chain. The results of the study indicate that delegating competencies and responsibilities within a company, along with motivating staff to become more committed to and influence the activities they perform, is a key organizational prerequisite for establishing an efficient supply chain management, which is one of the key qualitative indicators of any company's market and business success.

Keywords: *supply chain management, organizational structure, efficiency, Serbia.*

Sažetak

Elementi organizacione strukture imaju status važnog prediktora generisanja efikasnog upravljanja lancem snabdevanja, što je predmet analize u okviru ovog rada. Sprovedeno empirijsko istraživanje obuhvata uzorak od 51 preduzeća na teritoriji Zapadne Srbije. Njihova poslovna praksa iskristalisala je postojanje statistički značajne i jake korelacije između elemenata organizacione strukture i determinanti efikasnosti upravljanja lancem snabdevanja. U okviru istraživanja sprovedenog u radu, specijalizacija i decentralizacija su se izdvojile kao elementi sa najvećim uticajem na unapređenje kvaliteta proizvoda/usluga, skraćivanje rokova isporuke, efikasnije rešavanje reklamacija i redukciju troškova unutar lanca snabdevanja. Rezultati istraživanja pokazuju da delegiranje nadležnosti i odgovornosti u preduzeću, uz motivaciju kadrova da se više zalažu i utiču na aktivnosti koje obavljaju, predstavlja ključni organizacioni preduslov za uspostavljanje efikasnog upravljanja lancem snabdevanja, kao jednog od ključnih kvalitativnih pokazatelja tržišnog i poslovnog uspeha bilo kog preduzeća.

Ključne reči: *upravljanje lancem snabdevanja, organizaciona struktura, efikasnost, Srbija.*

Introduction

In modern business conditions, organizations are observed as open systems, prepared to respond quickly and effectively to any changes in the environment, which influences their survival and success under the conditions of fierce market competition. The struggle for survival and the advancement of one's competitive position in the market generates the need for extremely efficient, flexible and dynamic organizational structures. A good organizational structure is not a sufficient prerequisite for successful business of a company, but it is a component without which business success is impossible, regardless of how good the managers of a particular company are. Organizational structure elements not only determine the motivation and satisfaction of employees, but also significantly influence customer satisfaction, since only motivated staff will make efforts to achieve customer satisfaction and loyalty and thus establish an efficient supply chain management.

The broader scope of the paper includes an analysis of the influence of organizational structure on the establishment of an efficient supply chain management, which is one of the key indicators of business success of any company. The paper focuses on an empirical study of the correlation between organizational structure elements and supply chain determinants of efficiency, with the aim to identify the element that predominantly determines the success of a company in delivering the right product, at the right place and time, at acceptable costs. The aim of the paper is to determine the impact that organizational structure has on supply chain management efficiency, as one of the key qualitative indicators of the achieved performance of any given company.

The paper consists of four parts. The first part of the paper deals with the theoretical aspect of organizational structure and its key elements. Supply chain management, its general relations and determinants of efficiency are the topic of the analysis in the second part of the paper. The third part of the paper focuses on the presentation of contemporary research results regarding the interdependence of organizational structure and supply chain management efficiency. The fourth and the final part of the paper refers

to the conducted empirical research and presents its results on the interdependence between organizational structure and supply chain management efficiency based on the example of business practices of companies in Western Serbia.

Organizational structure elements

The organizational structure of a company involves the formal organization of its business units and activities, as well as defining the links between these components. It is a system of long-term projected and formally sanctioned company acts and relationships between elements in an organization [6], [8]. "An organizational structure is a set of pre-prepared solutions for emerging business situations," [44, pp. 25-35]. In simple terms, an organizational structure is a tool that enables people in an organization to better understand their roles, to facilitate coordination, control and communication.

The organizational structure model is predominantly dependent on the type and scope of activity of a particular company, where once the model is set, it may not be permanent. Organizational structure is also influenced by the age of the company, technology, ownership, culture, tradition and social environment. The simplest model of organizational structure is adequate for small businesses that produce, by using the same technology, one or two products, and market them by using the same combination of marketing mix elements. With the internationalization of business, the organizational structure becomes more complex.

The following elements of the organizational structure relevant for further empirical research in the paper are identified [6], [31], [42]:

- specialization,
- decentralization,
- departmentalization,
- coordination/control and
- formalization.

The specialization of individuals and narrow organizational units in one company is the result of the division of labor, as the basic activity of the organizational design [2, pp. 455-462]. The division of labor shows how

the entire set of tasks within an organization is divided into a number of smaller tasks. There is a high degree of correlation between the extent of division of labor and the level of specialization. In the case of high-level division of labor, narrow specialization occurs, whereas a low-level one implies a broad specialization. Horizontal and vertical dimensions of specialization can be identified. The horizontal dimension refers to the width of a job and the vertical to the depth.

Decentralization is a manifest form of the delegation of authority as an element of organizational design. Delegating authority is the process of delegating decision-making power from upper-level executives to lower-level executives. In addition to decentralization, an opposite form of this element is centralization. Centralization is actually the control from one center in an organization, while the decentralization of control refers to distributing control into multiple places [33, pp. 106-110]. There are numerous motives for decentralization: increasing information-processing capacity, shortening communication channels, faster response to changes in the environment, encouraging entrepreneurial and innovative efforts and so forth. The main risks of decentralization are: increased complexity of the organization, high coordination costs and difficult implementation of unique tactics in a crisis situation [37], [48].

Departmentalization involves grouping employees according to certain criteria in order to increase the homogeneity and facilitate coordination [3, pp. 30-35]. It refers to the division of the organization into narrow organizational units and defining their size. Jobs can be grouped according to various criteria: job type (functions – production, procurement, sales, etc.), geographical area, type of expertise and level of qualification (e.g. teaching and non-teaching staff at colleges) or clients (e.g. in banks). By grouping organizational units, an image of the organizational structure represented by the organizational chart is formed. The results of relevant research have shown that, unlike other elements of organizational structure, departmentalization does not have a strong influence on the achieved performance [4], [20], [40], [47]. That is why this element is not included as a relevant element for the following empirical research.

Coordination is an organizational design element that shows how organizational parts are connected as a whole and how the top of the organization exercises control over its parts. In simple terms, this element keeps the organization together. Several coordination/control mechanisms can be identified [45, p. 712]:

- Direct control – through a hierarchy of authority;
- Standardization – of inputs (knowledge, abilities and skills), work processes and outputs;
- Direct communication between managers, as well as between managers and employees.

Formalization is an indicator of the extent to which rules and procedures govern the activities of a company [22, pp. 274-287]. Practice has shown that compliance with rules and regulations contributes to tighter control in all stages of the production process, which is especially important with jobs that place emphasis on total low costs and batch production. Formalization contributes, on one hand, to reducing uncertainty and, on the other, to limiting individual reasoning, risk-taking and innovation. In the simplest of terms, it is the extent to which jobs within an organization are standardized and the behavior of employees is in accordance with rules and procedures. Today, each company has put in place defined procedures for each process in accordance with the Quality Management System and the requirements of the ISO 9001 standard. An audit of compliance with the defined procedures is carried out at least once a year by external entities, and it determines whether the entire business and manufactured products will retain the status “in accordance with ISO 9001”.

Supply chain management – General relations and determinants of efficiency

The beginning of the 21st century was marked by the intense globalization of commodity and information flows. The globalization of the world economy and its integrating processes has highlighted the multiple benefits of implementing a unified supply chain. This is why companies are increasingly beginning to understand the importance of developing efficient supply chains and logistics networks. Modern supply chains should be

dynamic, flexible and responsive networks that operate on a “feel and respond” principle versus the traditional “make and sell” principle [13, p. 2]. Effective solutions across all elements of the chain (procurement, production, storage, supply, transport and distribution) are the key factor for the survival and success of companies in a highly competitive environment.

Supply chain management also refers to the implementation of globalization of the world economy in the context of intensive commodity and information exchange [1, p. 86]. It is the integration of all business processes along the supply chain [16, p. 4]. Over the last four decades, supply chain management has received a great deal of attention from the professional public and business practice alike. Being a relatively young business philosophy, its concepts have had a positive impact on the value creation within the chain, which can be achieved by their implementation. The concept of supply chain management, along with logistics management, promotes the idea of “delivering the right product at the right time and place, in an adequate condition and at a reasonable price” [10], [17].

Supply chain management is a phenomenon that influences all areas of business [34, p. 31] and is at the core of the competence of all successful companies [11], [34]. It is most commonly defined as managing relationships between businesses located in front of and/or behind the (parent) company in one supply chain, thus managing the relationships with suppliers and customers to deliver value added, at lower costs, along the entire supply chain. Supply chain management is the organization of a network of interconnected businesses aimed at providing products and services that meet the requirements of end customers (consumers) [19, p. 3]. Authors such as Bowersox, Cavinato, Mentzer, Cooper, Shah and many others offer similar definition determinants.

A particular company is at the center of the network (chain) of suppliers and consumers. It aims to develop and deliver the inputs of the supply chain in the most efficient way possible. The implementation of supply chain activities involves the exchange of information which depend on market fluctuations and production capabilities. In addition, the implementation of the supply chain management system contributes to the reduction of stock prices owing to more

accurate requirements and needs forecasts, as well as better production planning according to those needs. With better production planning, the company incurs lower costs as a result of successful management of material flows throughout its production process. The flow of materials follows the flow of information, and the implementation of the supply chain management system significantly improves communication (flow of information) between suppliers, companies and distributors. For this reason, a product as an out-of-the-box integrated business entity would be more competitive in the market, than a product resulting from business cooperation between off-chain companies. The sum of values is greater and the sum of costs is lesser if the companies operate inside the supply chain, rather than outside it [1, p. 86]. Thus, establishing and developing an efficient supply chain is in fact one of the key goals of each company, and partnerships between the participants in the chain are a key prerequisite for achieving this goal.

Supply chain analysis facilitates company management in terms of planning and controlling all processes that link a particular entity to its partners in one supply chain, with the aim of servicing the needs of end users. At the same time, it contributes to increasing productivity on the supply side, reducing overall business costs and improving competitive position in target markets. Within the structure of the supply chain, it is important to determine precisely which participants, resources, potentials, locations and processes take place within the chain, in which way goods, information and financial flows are effected and so forth [17, pp. 43-70]. An analysis of how the chain is managed is also important. It is necessary to consider who makes the decisions, which management strategies are used and how much influence can be exerted on an individual participant within the chain. Performance evaluation of the chain is the last step that leads to its successful management.

Relationship marketing plays a very important role in supply chain theory and practice. It is defined as “all marketing activities aimed at establishing, developing and maintaining successful relationships” [38, p. 22]. Supplier relationship management (SRM) and customer relationship management (CRM) are broader terms than relationship marketing, and are essential for establishing

an efficient supply chain management. Since managing the supply chain is an integrative philosophy of guiding the total distribution channel flow from supplier to end consumer, it can be concluded that SRM and CRM are very important parts of supply chain management.

Marketing relationships are usually initiated by suppliers. However, there is no reason for buyers (companies) themselves not to be the first to initiate and take responsibility for establishing and maintaining long-term relationships with suppliers [30, pp. 131-154]. Supplier relationship management indicates that honesty, trust, loyalty and interdependence are key determinants of supplier-customer collaboration. A fair treatment of the customer by the supplier, and vice versa, is the first step towards successful and long-lasting cooperation. The mediating role of trust between fairness and loyalty is influenced by the structure of interdependence between the supplier and customer [24], [25], [26].

Suppliers strive to build good reputations with their customers, which will be the basis for attracting new customers, as well as retaining the existing ones. The goal of the supplier is to gain the trust of the existing customers and to make them loyal. The customer's trust is actually the link between the fairness of the supplier and the customer's loyalty to the supplier. A loyal customer is something that is of great value in a market where competition is fierce, and it is one of the main goals of every supplier's business. Suppliers are working intensively to improve their CRM activities as they seek to build long-term partnerships with a particular company, which testifies to the intersection of CRM and the supplier with the customer's SRM [32, pp. 34-55].

CRM is an area of management that focuses on the strategy of developing long-term customer relationships. It is characterized by a detailed analysis of customer relationships and is based on capabilities, methodology and technology that enables a business to function through the advancement of consumer relationships. The main goals of introducing this concept are: striving to establish stronger relationships with customers, reduce costs, increase efficiency, make profits and survive in the market. The listed goals are also some of the key goals of the supply chain management business philosophy. Practice

has shown that the implementation of the CRM concept yields multiple benefits to companies: reducing the cost of attracting new customers, increasing the number of long-term customers, reducing sales costs, increasing customer profitability and increasing customer loyalty. By generating these benefits, the company establishes its supply chain in the most efficient and effective way possible.

It can be stated that the supply chains of the supplier companies and the buyer companies (which are further processed by the procurement entity) are intertwined, and that the supplier CRM is closely linked to the customer SRM, with the common aim of building long-term partnerships. The philosophy of supply chain management emphasizes the importance of partnerships between all participants in the supply chain in order to deliver superior value to end users. That is why SRM and CRM, aimed at establishing long-term partnerships between supplier-company and customer-buyer, have a great influence on the efficiency of the supply chain management in a particular company, and therefore its success in the conditions of fierce competition in the market.

To conclude, supply chain management integrates all business functions along the entire distribution chain, not just in one company. The company is at the center of the distribution chain, i.e., at the heart of the supplier and customer network. Its goal is to develop and implement the supply chain in the most efficient way possible, and this is achieved through detailed planning and control of all the processes that link the company to its partners in order to service the customers' needs. There are four key determinants of supply chain management efficiency identified in relevant literature: product quality, delivery time, complaints resolutions and price [23], [24], [39], [46]. These four determinants are used in the conducted empirical research that is presented in the final part of the paper.

The influence of organizational structure on the establishment of an efficient supply chain management

During the period between the 1960s and 1990s, a large number of authors based their research on analyzing the

impact of organizational structure on the performance of companies. Summarized results have shown that companies with clearly defined strategies and organizational structures, as well as a leadership style focused on employee motivation, were more successful and efficient (Figure 1) [7], [27], [30], [41]. An efficient organizational structure has emerged as one of the key competitive advantages and an important factor in a company’s market success, especially if it is aligned with the company’s mission, its competitive environment and the resources available.

Figure 1: Prerequisites for generating efficient company operations



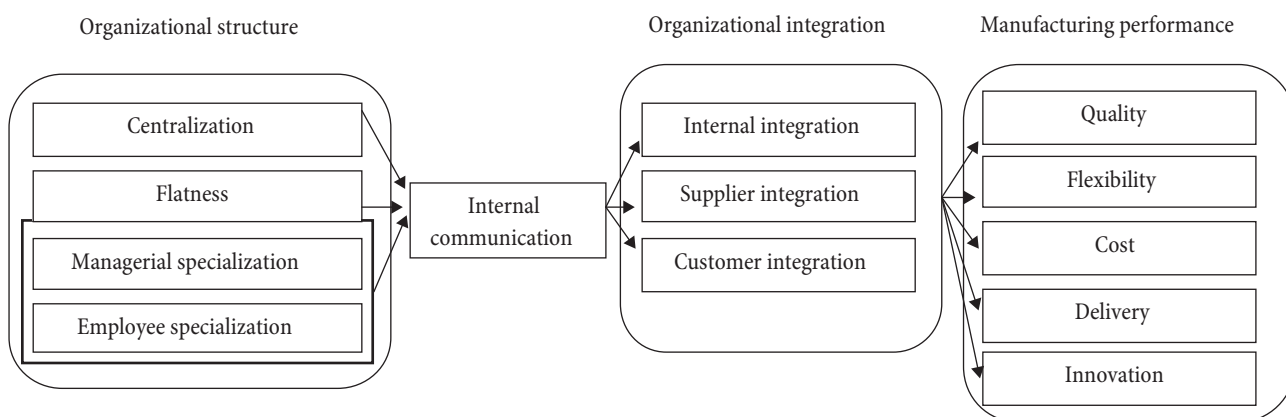
Source: [7], [27], [30], [41].

Various research results have shown that an efficient organizational structure generates higher investments, implementation of more advanced technologies, higher motivation of workers to contribute to the improvement of product quality and higher productivity of work, all

of which directly affects the improvement of business efficiency. Business practices of companies have shown that organizational structure can be a very important factor in achieving profitability, growth and development [36], [41]. In other words, a good organizational structure is a necessary, but not a sufficient prerequisite for the efficient operation of any company. It should always follow a strategy to improve performance. For the implementation of the strategy as a long-term plan of an organization, it is very important that there is an organizational structure that will pave the path for its implementation and performance improvement.

Establishing an efficient supply chain management is a very important indicator of the performance of any business. CRM and SRM, as integral parts of supply chain management, are very important determinants of market success. Many authors have analyzed the influence of organizational structure on the efficiency of the supply chain, observing this variable as one of the qualitative indicators of achieved performance. The research results have shown that the organizational structure of the company, through its impact on the quality of communication within the company, affects the relationship with suppliers and customers, which directly reflects the quality, flexibility, cost, innovation and delivery, and consequently the performance and efficiency of a particular business (Figure 2). Certain authors demonstrated a statistically significant correlation between decision centralization, specialization and organizational performance, mediated by the quality of internal communication significantly conditioned by the authority hierarchy [47, pp. 69-81].

Figure 2: The influence of organizational structure on organizational performance



Source: [47].

Organizational structure, besides being a significant factor in creating an efficient business, has been recognized as a very important factor in establishing an efficient supply chain management, with the primary goal to deliver the right product, at the right place and time, at acceptable costs. Centralization and specialization have emerged as dimensions of organizational structure with the greatest impact on business performance, primarily on cost effectiveness.

A large number of papers have identified organizational structure as an important factor in ensuring an efficient and flexible organization that will be able to respond quickly and effectively to changes in the environment. Business practices have shown that organizational structure elements have a great influence on the relationship of a company with its partners in the supply chain, thereby directly affecting quality, delivery and cost as indicators of efficiency of supply chain management [19], [30], [34], [41], [43], [50]. Research has proven that there is a statistically significant impact of specialization, decentralization, coordination/control and formalization on the level of business performance, observed through the indicators of efficiency of supply chain management.

To continue, the influence of the elements and characteristics of organizational structure on the indicators of efficiency of supply chain management is analyzed through an empirical research based on the conclusions of a previously conducted research concerning this topic. The empirical research was carried out with the goal to investigate the extent to which organizational structure is the determinant of business success and how important it is to redesign it in order to achieve optimum supply chain performance.

Research methodology

In order to identify the elements of organizational structure with the greatest impact on supply chain efficiency indicators, an empirical research was conducted on a sample of 51 companies in the region of Western Serbia (Užice, Požega, Kosjerić, Čajetina, Čačak and Priboj). Statistically observed, this is considered to be a sample of an adequate size, since the respondent entities are companies ($n > 30$)

[12, pp. 426-432]. The sample included manufacturing, trade and service companies that fall under the category of medium and large companies. Throughout the course of the research, it was assumed that the sample was random. The data were collected through a combination of analysis of available company documents and interviews with employees. A simplified starting model for the research is presented in the following Figure 3.

The starting model presented above and the relevant literature were the basis for defining the five starting research hypotheses:

- H1: Organizational structure elements have a statistically significant effect on product quality.
- H2: Organizational structure elements have a statistically significant effect on adherence to the agreed delivery time.
- H3: Organizational structure elements have a statistically significant effect on the efficiency of resolving complaints.
- H4: Organizational structure elements have a statistically significant effect on cost savings, which is reflected in the product cost.
- H5: Organizational structure is a significant factor in developing an efficient supply chain management.

Elements of organizational structure are evaluated on a five-point Likert scale, i.e., grades are assigned from 1 to 5 [49, pp. 126-139]. Grades are assigned on the basis of analysis of official documents of the companies included in the research, in consultation with their employees. For example, for the element “specialization” a score of 5 indicates high specialization, while a score of 1 indicates low specialization. The same principle applies to other elements, as well.

Determinants of supply chain management efficiency are evaluated based on the results of customer/client satisfaction surveys of the companies included in the survey. At the end of the year, each firm conducts a survey of its customers' views on all aspects of the business. From the available questionnaires, the aspects that determine a successful supply chain management are identified, regarding the delivery of the right product to the right place at the right time and at acceptable costs: product quality (evaluation of delivery of the right product), delivery time (delivery

at the right time), resolution of complaints (an indicator of the efficiency of CRM, an essential determinant of supply chain management) and pricing (cost acceptability from a customer's perspective). In all questionnaires, the items listed above are rated 1-5. Questionnaires for 2019 were used to calculate the average score for each of the determinants of supply chain management efficiency following the principle: grade 5 – average score higher than 4.5; grade 4 – average score higher than 3.5; grade 3 – average score higher than 2.5; grade 2 – average score higher than 1.5; grade 1 – average score higher than 1.5.

All variables in the baseline model are defined based on relevant literature. Organizational structure elements are identified as independent variables, while the determinants of supply chain management efficiency are observed as dependent variables. IBM statistical software SPSS was used to analyze the collected data. Firstly, a descriptive statistical analysis was conducted on the entire sample with the aim of observing the variability of data across companies. The second step was a correlation analysis conducted in order to calculate the strength of the relationship between the variables included. Finally, a multiple regression analysis was performed with the aim to identify the elements of organizational structure that have the greatest impact on each of the determinants of supply chain management efficiency.

Statistical analyses

The results of the descriptive statistical analysis are presented in Tables 1 and 2. By implementing the descriptive analysis, calculations were made regarding the mean and standard deviation for each of the variables that determine organizational structure and supply chain management.

The results of the descriptive statistical analysis presented in Table 1 show that the standard deviation values for organizational structure elements range from 0.625 to 0.864, indicating a similar degree of heterogeneity of ratings across companies in Western Serbia (Užice, Požega, Kosjerić, Čajetina, Čačak and Priboj). It is worth noting that most of the companies base their business on the implementation of clearly defined procedures in accordance with quality management standards (QMS)

and the requirements of the standard ISO 9001 (mean 4.04). All companies from the sample exhibit a rather high level of specialization (mean 3.83), where employees are thought to be specialized in performing a relatively narrow set of homogeneous activities, while the impact they have on the jobs they perform is moderate. Coordination and control in a large number of companies surveyed is based on the standardization of results and inputs/outputs, while certain companies combine this mechanism with direct control. Delegation of authority when making business decisions is fairly represented in the surveyed companies (mean 3.56).

Table 1: Results of the descriptive statistical analysis for the organizational structure elements

| Variable | Mean | Std. deviation |
|---|------|----------------|
| Specialization | 3.83 | 0.834 |
| Decentralization | 3.56 | 0.850 |
| Standardization-based coordination and control | 3.63 | 0.864 |
| Formalization – procedures according to the QMS | 4.04 | 0.625 |

Source: Output from SPSS.

Table 2: Results of descriptive statistical analysis for the determinants of supply chain management efficiency

| Variable | Mean | Std. deviation |
|-----------------------|------|----------------|
| Product quality | 3.94 | 0.639 |
| Delivery time | 3.52 | 0.727 |
| Complaint resolutions | 3.58 | 0.750 |
| Price | 3.77 | 0.703 |

Source: Output from SPSS.

The results of the descriptive statistical analysis presented in Table 2 show that the standard deviation values range from 0.639 to 0.750, which is an indicator of a similar degree of heterogeneity of grades across companies in Western Serbia. The customers of the surveyed companies are mostly satisfied with the quality of products (mean 3.94) and the product price (mean 3.77). The commitment of the company in resolving complaints (mean 3.58), as well as compliance with the agreed delivery deadlines (mean 3.52) were rated above average.

The consistency of the variables that determine the organizational structure and supply chain management efficiency was verified by using the Cronbach's alpha coefficient [29, pp. 1-188]. The recommendation is that the confidence threshold should not be less than 0.7, which is not

compromised in this study. The Cronbach's alpha coefficient for all the variables that fall under "organizational structure" is 0.904, whereas for all the variables that fall under "supply chain management efficiency" it is 0.896. It was concluded that there was a high degree of reliability of the elements of organizational structure and supply chain management determinants of efficiency, thus creating the basis for the employment of the correlation statistical analysis.

After the descriptive analysis, a linear correlation analysis was performed. The aim of the correlation analysis was to identify the existence of potential relationships and the strength of those relationships between all organizational structure elements and the determinants of supply chain management efficiency. All statistically significant Pearson correlation coefficients (r) are presented in Table 3 and marked with ** (** refers to $p < 0.01$).

Table 3 shows that the correlation coefficients between every two variables included are statistically significant (marked by **), i.e., that there is a statistically significant relationship between all the variables in this study. Following Kohen's recommendation [15, pp. 79-81], it can be concluded that there is a high value of Pearson correlation coefficients (r in the 0.50-1 interval) between all variables except for the Formalization and Delivery time ($r=0.430$), which is largely due to the fact that if the employees follow the defined procedures, that does not guarantee that the particular company will comply with the agreed delivery time. Delivery time may be affected by external factors such as weather, carrier failure, customs delays, traffic jams and so forth. The highest value of the Pearson correlation coefficient was identified between Specialization and Product quality ($r=0.901$), while decentralization was identified as the organizational

structure element with the strongest correlation with the determinants of supply chain management efficiency (Pearson correlation coefficients in the 0.712-0.808 interval).

Following the correlation statistical analysis, a multiple regression analysis was conducted with the aim to identify the organizational structure element with the greatest influence on the determinants of supply chain management efficiency. The goal was to identify what the businesses need to do in order to establish an efficient supply chain management and therefore improve their market position. Four regression analyses were performed, where elements of the organizational structure (specialization, decentralization, coordination/control and formalization) were observed as independent variables, while the dependent variables were the determinants of the efficiency of supply chain management (product quality, delivery time, complaints and price).

The impact of the organizational structure elements on product quality was first examined as a determinant of supply chain management efficiency. Thus, in the first regression, elements of organizational structure were observed as independent variables (specialization, decentralization, coordination/control and formalization), while the quality of the product was the dependent variable. The results are presented in Table 4. The model explains approximately 82.9% of the variance of the dependent variable ($R^2=0.829$). Specialization stood out as an element of organizational structure with the most significant impact on product quality ($p < 0.01$). The explanation is that qualified personnel who perform a relatively narrow set of work tasks can fully focus on product features and details, therefore contributing the most to the production of a high-quality product.

Table 3: Results of the correlation statistical analysis

| | Special. | Decentral. | Coord./Cont. | Formaliz. | Quality | Delivery time | Complaint | Price |
|------------------|----------|------------|--------------|-----------|---------|---------------|-----------|---------|
| Specialization | 1 | 0.859** | 0.782** | 0.540** | 0.901** | 0.733** | 0.727** | 0.767** |
| Decentralization | 0.859** | 1 | 0.791** | 0.513** | 0.783** | 0.791** | 0.808** | 0.712** |
| Coord./control | 0.782** | 0.791** | 1 | 0.717** | 0.742** | 0.745** | 0.786** | 0.762** |
| Formalization | 0.540** | 0.513** | 0.717** | 1 | 0.595** | 0.430** | 0.537** | 0.690** |
| Product quality | 0.901** | 0.783** | 0.742** | 0.595** | 1 | 0.656** | 0.684** | 0.799** |
| Delivery time | 0.733** | 0.791** | 0.745** | 0.430** | 0.656** | 1 | 0.806** | 0.545** |
| Complaint | 0.727** | 0.808** | 0.786** | 0.537** | 0.684** | 0.806** | 1 | 0.629** |
| Price | 0.767** | 0.712** | 0.762** | 0.690** | 0.799** | 0.545** | 0.629** | 1 |

Source: Output from SPSS.

**Table 4: Regression coefficients
(product quality as the dependent variable)**

| | Unstandardized coefficients | | Standardized coefficients | t | Sig. |
|----------------------|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. error | Beta | | |
| (Intercept) | .889 | .270 | | 3.289 | .002 |
| Specialization | .630 | .096 | .822 | 6.588 | .000 |
| Decentralization | .014 | .096 | .018 | .141 | .889 |
| Coordination/Control | .024 | .093 | .033 | .259 | .797 |
| Formalization | .169 | .089 | .165 | 1.892 | .065 |

Source: Output from SPSS.

In the next step, a regression analysis was conducted with the delivery time as the dependent variable (Table 5). The model explains approximately 67.8% of the variance of the dependent variable ($R^2=0.678$). The table presenting the regression coefficients shows that decentralization and coordination/control are elements of organizational structure that have a significant influence on the time of delivery ($p<0.01$). The explanation is that delegation of authority and greater involvement of employees in the decision-making process significantly contributes to their motivation and efficiency in performing their work tasks, which results in a timely production and dispatch of products. Coordination/control based on the standardization of knowledge and results further contributes to an efficient and timely production. The delivery itself is also influenced by a number of external factors that are unaffected by businesses, but organizational factors are still a very important part of generating timely delivery.

**Table 5: Regression coefficients
(delivery time as the dependent variable)**

| | Unstandardized coefficients | | Standardized coefficients | t | Sig. |
|----------------------|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. error | Beta | | |
| (Intercept) | 1.262 | .422 | | 2.993 | .004 |
| Specialization | .087 | .149 | .100 | .582 | .563 |
| Decentralization | .388 | .150 | .453 | 2.584 | .000 |
| Coordination/Control | .356 | .146 | .423 | 2.444 | .000 |
| Formalization | .186 | .139 | .159 | 1.332 | .189 |

Source: Output from SPSS.

Table 6 presents the results of the regression analysis where the resolution of complaints is the dependent variable. The model explains approximately 71.1% of the variance of the dependent variable ($R^2=0.711$). In

this model, decentralization and coordination/control stand out as elements of organizational structure with a significant impact on the efficiency of complaints resolution. The explanation is that the business practices of the companies included in the research have shown that employee involvement in all aspects of the business is the basis for their motivation and greater commitment in performing their work tasks, which also results in their interest in contributing as much as possible to achieving customer satisfaction and gaining their loyalty, therefore responding quickly and efficiently to customer needs and complaints. Standardization-based coordination/control has proven to be a very efficient means of minimizing complaints which, combined with the commitment of employees to resolving them quickly and efficiently, results in achieving customer satisfaction, establishing efficient CRM and thus efficient SCM.

**Table 6: Regression coefficients
(complaints as the dependent variable)**

| | Unstandardized coefficients | | Standardized coefficients | t | Sig. |
|----------------------|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. error | Beta | | |
| (Intercept) | .783 | .412 | | 2.900 | .004 |
| Specialization | .027 | .146 | .030 | .182 | .856 |
| Decentralization | .457 | .147 | .518 | 3.117 | .000 |
| Coordination/Control | .344 | .142 | .397 | 2.418 | .000 |
| Formalization | .004 | .136 | .003 | .030 | .976 |

Source: Output from SPSS.

**Table 7: Regression coefficients
(price as the dependent variable)**

| | Unstandardized coefficients | | Standardized coefficients | t | Sig. |
|----------------------|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. error | Beta | | |
| (Intercept) | .317 | .390 | | 2.813 | .002 |
| Specialization | .346 | .138 | .410 | 2.504 | .006 |
| Decentralization | .061 | .139 | .074 | .441 | .662 |
| Coordination/Control | .125 | .135 | .153 | .926 | .359 |
| Formalization | .360 | .129 | .320 | 2.795 | .000 |

Source: Output from SPSS.

In the last step of the multiple regression analysis, price, as a determinant of supply chain management efficiency, was observed as the dependent variable. The model explains approximately 70.5% of the variance of the dependent variable ($R^2=0.705$), and specialization and formalization stand out as elements of organizational

structure with a significant impact on the efficiency of the company in reducing costs. The explanation is that business practices have shown that companies with high horizontal and vertical specialization, which follow QMS rules and procedures, are significantly more successful in achieving customer satisfaction with the price of products/services. Qualification of the staff in performing the relatively narrow set of work tasks that they can influence has a significant impact on their motivation to engage more in reducing the costs and therefore the final price of the products/services. Performing work tasks in accordance with processes and procedures significantly reduces production wastes and production downtime, which also contributes to cost reductions.

Discussion of the obtained research results

The previously conducted statistical analyses have identified the relationships between organizational structure elements and the determinants of supply chain management efficiency. The results of the correlation analysis have shown that there are statistically significant correlations between all variables included in the research, i.e., between all the elements of organizational structure and the determinants of supply chain management efficiency. The existence of this interdependence is the best indicator that each of the two variables listed above affects the other, thus proving, i.e., unequivocally confirming all the research hypotheses put forward in this paper. Therefore, the results of the correlation analysis confirmed the following hypotheses:

- H_1 : Organizational structure elements have a statistically significant effect on product quality – confirmed. The results of the correlation analysis have shown that each of the organizational structure elements (specialization, decentralization, coordination/control and formalization) has a statistically significant relationship with product quality as a determinant of supply chain management efficiency; all correlation coefficients indicate strong correlations ($r > 0.5$). The results of the regression analysis identified specialization as an element of organizational structure with a significant impact on product quality. Thus, high horizontal and vertical specialization is a key

organizational predictor of generating greater staff motivation to contribute to the production of a high-quality product.

- H_2 : Organizational structure elements have a statistically significant effect on adherence to the agreed delivery time – confirmed. The results of the correlation analysis identified a statistically significant influence of each of the organizational structure elements on compliance with the agreed delivery time. All correlation coefficients proved to be of high value ($r > 0.5$), with the exception of the effect of formalization on compliance with the delivery time. That is due to the fact that compliance with the QMS procedures and requirements of ISO 9001 does not guarantee that the goods will reach the customer on time, since delivery is also affected by a number of factors that are not connected to a particular undertaking, e.g. traffic jams, vehicle breakdowns, customs delays and so forth. The results of the regression analysis identified decentralization and coordination/control as elements of organizational structure that have a significant influence on delivery time.
- H_3 : Organizational structure elements have a statistically significant effect on the efficiency of resolving complaints – confirmed. There is a proven statistically strong correlation between all variables, with the strongest correlation being between decentralization and efficient complaint resolution ($r = 0.808$). The results of the regression analysis highlighted that decentralization and coordination/control stand out as elements of the organizational structure with a significant impact on the efficiency of complaints resolution.
- H_4 : Organizational structure elements have a statistically significant effect on cost savings, which is reflected in the product cost – confirmed. There is a proven statistically strong correlation between all variables, with specialization and coordination/control being the organizational structure elements with the greatest impact on cost reduction, and hence customer satisfaction regarding price. The results of the regression analysis showed that specialization and formalization stand out as elements of organizational

structure with the most significant impact on the efficiency of a company in reducing costs. Business practices have shown that companies with a high horizontal and vertical specialization, which follows QMS rules and procedures, are significantly more successful in achieving customer satisfaction with the price of products/services.

- H_3 : Organizational structure is a significant factor in developing an efficient supply chain management – confirmed. A correlation between all the variables that fall under “organizational structure” or “supply chain management” has been proven, with the results of the regression statistical analysis identifying specialization as the organizational structure element that has the most significant influence on establishing an efficient supply chain management among companies included in the survey.

The results of the correlation analysis identified the elements of organizational structure as important factors for establishing an efficient supply chain management. According to the results of the correlation analysis, specialization and decentralization are the variables that form the strongest relationship with the determinants of supply chain management efficiency. Higher degree of specialization, both on a horizontal and vertical level, brings a greater satisfaction of customers/clients with product quality, delivery times, method of resolving complaints and prices. Decentralization, according to the correlation analysis, stands out as the element that has the strongest relationship with product quality, compliance with agreed delivery times, efficiency of resolving complaints and price. Delegating authority from the upper to lower levels within the organizational structure leads to greater initiative in problem solving, shortening the communication channels, greater innovation and quicker response to changes in the environment, including changes in customer/client requirements and needs.

The results of the regression analysis have identified which element of the organizational structure has the most significant effect on each of the determinants of supply chain management efficiency. High horizontal and vertical specialization stood out as an important predictor of generating high-quality products and, along

with formalization, reducing production costs (final product prices). Decentralization in decision-making, greater employee involvement in all aspects of business and coordination/control based on standardization of knowledge and results have proven to be key predictors of meeting the agreed delivery times and resolving complaints efficiently. Therefore, each of the elements of organizational structure has a statistically significant influence on one of the determinants of the efficiency of supply chain management.

It can be concluded that organizational structure is a significant predictor of attaining the efficiency of supply chain management. High horizontal and vertical specialization and performance of work in accordance with regulations and procedures are key predictors of generating high-quality products at reasonable costs, i.e., delivering the right product at an acceptable cost. Decentralization in decision-making, greater involvement of employees in company activities and a coordination/control mechanism based on standardization of inputs and outputs were singled out as the most important factors concerning delivery time and minimizing customer complaints, i.e., delivering the right product at the right time and in the right place. In short, a good organizational structure by itself is not sufficient to establish an effective and efficient supply chain management and the business success of the company, but it is a very important factor in achieving these business goals.

Theoretical/practical implications, research limitations and further lines of research

The scientific contribution of this paper includes a better understanding of the interdependence of organizational structure and supply chain management as one of the qualitative indicators of the achieved company performance. The research results form the basis for making relevant theoretical and practical conclusions about the impact of organizational structure dimensions on the determinants of supply chain management efficiency, while providing guidance to company management by suggesting which organizational structure elements to focus on in order to develop an efficient supply chain management. The

essential scientific contribution of this paper is to create empirically supported evidence that organizational structure dimensions are significant determinants of supply chain management efficiency.

One of the limitations of this research is the fact that it implies that organizational structure and its elements do not change, i.e., that they remain stable. Another limitation is the fact that conclusions about the elements of the organizational structure were made on the basis of discussions with higher ranked employees in the surveyed companies, while there was no input from the employees performing operational tasks. An extenuating circumstance is the fact that the results of the descriptive statistical analysis showed that the respondents' attitudes regarding the organizational structure elements were relatively homogeneous and therefore representative of the way in which the respondents of the surveyed companies indicated the influence of organizational structure elements on the supply chain management determinants of efficiency.

The element that could significantly improve the research regarding the interdependence of organizational structure and supply chain management would be to monitor the evolution of organizational structure elements, accompanied by an analysis of how this evolution reflects on the determinants of supply chain management efficiency. This would empirically prove whether a change in any of the organizational structure elements positively or negatively affected the supply chain management dimensions. Future research should follow this line of thought, with the aim of exploring more deeply the interdependence of organizational structure and supply chain management and forming a stronger link between qualitative and quantitative research concerning this topic.

Conclusion

Organizational structure plays a very important role in ensuring an efficient and flexible organization that is able to respond quickly and effectively to changes in the environment. It is considered to be very important for the growth of profitability and development of the company. For the implementation of a strategy as a long-term plan of any organization, it is very important that there is an

organizational structure that will pave the way for its implementation and performance improvement. An efficient organizational structure generates greater investment, implementation of more advanced technologies, greater employee motivation and higher productivity, which directly affects the efficiency of supply chain management, which is one of the key qualitative indicators of business performance.

Business practices of companies in the territory of Western Serbia have shown that there is a very strong and statistically significant correlation between the elements of organizational structure and the determinants of supply chain management. High horizontal and vertical specialization stood out as an important predictor of generating high-quality products and, along with formalization, reducing production costs (final product prices). Decentralization in decision-making, greater employee involvement in all aspects of business and coordination/control based on standardization of knowledge and results have proven to be the key predictors of meeting the agreed delivery times and resolving complaints efficiently. In simple terms, organizational structure is an important predictor of developing an efficient supply chain management, and therefore market success of any company.

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