

MANAGING SUPPLY CHAIN AND ORGANIZATIONAL PERFORMANCE: AN EVIDENCE FROM THE MACEDONIAN DAIRY INDUSTRY

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The objective of this paper is to attempt to explain the main challenges of supply chain management efficiency in the dairy industry and within the context of general theoretical considerations relating to supply chain management. This paper examines theoretically and empirically the current supply chain practices, integration with customers and suppliers and organizational performance in the dairy companies in North Macedonia. Cost savings, increased revenues and overall organizational performance was examined and various practices of local companies were evidenced. The study also highlights the evolution, determinants and practical implications of supply chain management efficiency in strategic and operational contexts and especially in regards to achieving competitive advantage. A self-administered survey was conducted and data were collected through a random sampling of local dairy companies in North Macedonia. The findings of this study show that the quality, speed, dependability, flexibility and cost associated with economic benefits in the dairy industry can be achieved through technological innovation, effective business processes and high level of information sharing and introducing the SCM practices into more cooperative organizational relationships. Currently, there is a strong need to find better practical solutions that will help decision makers in the dairy industry to plan their supply chain activities more efficiently and effectively by managing the posed challenges and barriers. This will serve as also to make better strategic decisions with end-to-end supply chain optimization mode.

Keywords: Supply chain management, competitive advantage, organizational performance, dairy industry

JEL Classification: L11, L21, L22, L23

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1. Introduction

All the organizations and activities associated with the flow and transformation of goods from the raw materials stage, through the end user, as well as the associated information flows, both upstream (supply network) and downstream (distribution channel) is known as supply chain (Handfield, 1998). Managing the flow between customers' customers and suppliers' suppliers are commonly expressed as supply chain management (SCM). In the literature and numerous publications, we can find a lot of practices and strategies which organizations used for managing the supply chain as one of the rapidly emerging topics nowadays. The roots of supply chain can be traced back to when organizations were dealing with the movement of products in the right place at the right time, however in the 21st century organizations tend to implement internet based technology for better predictions and satisfaction of their customers's needs. The implementation of the technology was crucial because it solved a number of past barriers such as: huge costs for communication and coordination between partners. Additionally, it provided more room for the operational managers to look beyond an internal view if they wanted to manage their operations more effectively. Another important detail that affects the supply chain is the new way of leadership and management introduced by the managers which was widely shared and respected by the supply chain members. This form of management provides an easier, direct and simpler way of dealing with more employees and stages in one organization. Finally, the availability of highly trained and well educated workers gives a more secure and stable following of the given directions. They need to know their position in the organization as well as the responsibility and authority for making decisions in their scope of work. The combination of these three factors will make the supply chain management much easier. However, the competition in the market will push the organization to explore all possible situations for achieving a competitive advantage. The role of supply chain management (SCM) needs to be useful in the process of creating a high-performing value system with cooperative organizational relationships, effective business processes and high level of information sharing with a main goal of proving a competitive advantage to the organization (Handfield, 2002).

The paper contributes to a deeper theoretical and empirical research of supply chain management in developing countries through the lens of achieving competitive advantage. The motivation for the research was to encourage managers and policymakers to improve the dairy supply chain performance without harming the efficiency and while meeting competitive expectations.

2. Literature review

According to Robinson (2015) the recognition of the term supply chain became widespread mainly as a result of the globalization of manufacturing since the 1990s, and in time there

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has been an increasing trend to use supply chain as a term that refers to strategic issues, and logistics to refer to tactical and operational issues. On one hand, logistics is that part of the supply chain process that plans, implements and controls the efficient, effective forward and reverse flow and storage of goods, services and related information between the start (point of origin) and the point of consumption with particular goal, to meet customers' requirements. On the other hand, supply chain management provides systematic, strategic coordination of the traditional business functions and their tactics within a particular company for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole. There are plenty of definitions that explain the function of the supply chain management (SCM). According to Ross (2000), the development of SCM characteristics is explained as transformation from simple extension of integrated logistics management to the business philosophy of the whole field of supply chain management. All supply chain management has one common and central mission that needs to be accomplished – develop a formula for satisfying the end-customer needs. Bertodo (2002) suggested that planning, procuring, manufacturing, marketing and distributing which are set up in the organizations along the supply chain, operate independently with their own objectives and in most of the cases these objectives are conflicting. All this proves that there is a need for a system which will coordinate and integrate all organizations together. In the study of Gaspar, et al (2005) the main focus is given on creating an alliance between businesses' respective strategies by making positive contributions to the achievement of each party's objectives.

There are different types of supply chain strategies which can be classified as traditional or modern approaches. Under the traditional approach organizations use push based supply chain strategy in which all activities for production and distribution will be planned based on long term forecasts. The producer will use all sources of information received from their trading partners (retailer, customer, marketing, supplier, etc.) for forecasting the possible demand for their products or services. Taking into account that forecasts sometimes may be wrong, push based supply chains will need more time to react to some changes in the marketplace. On the other hand, there is a pull based supply chain strategy in which the production will not be based on forecast, but on what the true customer will demand. It suggests that the organization will not hold any stock and will produce only by order. It may bring product delays which will be impractical for the customers, however it will eliminate the cost of holding inventory by responding to the demand. Additionally it will be hard to achieve economies of scale because all decisions are made based on instant customer demand. The combination of both strategies as a hybrid mode will deliver the greatest result because all stages in the supply chain demand implementation of different strategies which will be suitable for a certain period.

According to Porter (1985), every organization represents a group of combined activities that need to be done for designing, producing, marketing, delivering and supporting their products. All these activities have important roles in providing assistance and additional value

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to the final product. The value is defined as what buyers are willing to pay for what they get from the supplier. Value is measured by the total revenue, the sum of the price of the products and the number of units one particular organization can sell. The value chains of the companies in some field of activities may be different from each other because of some factors. The historical performance of the organization (past results), the strategy that they are using and also the level of successful implementation of their strategy, are crucial factors that affect the value chain. Porter (1985) strongly supported the fact that one organization will be profitable only if the value that they generate exceeds the cost that they need to pay for generating that value. Based on this, every analysis on the competitive situation needs to be based on the value, not on the cost (Porter, 1985). Furthermore, an analysis on the value chain is a better and more appropriate way to examine a competitive advantage rather than analysis on the value added. Added value (selling price less the cost for producing) is sometimes used as an important feature for cost analysis because many organizations believe that it is an area in which they can control and reduce costs. However, an important factor is that added value recognizes only raw materials and does not take into consideration other factors that have a crucial impact on the value of the product. Moreover, the linkages between organizations and their supplier represent an important area in which the cost can be reduced, but added value fails to highlight all this.

In regards to its operational value, the supply chain status of the relationships with immediate suppliers/customers and how it is managed has great importance and represents a deciding factor in every chain. Today, with the significant growth of e-commerce, many different ways of supply chain relationships can be developed. Furthermore, they distinguish the relationship with the ultimate consumer (the final link in the supply chain) and the relationship which involves two commercial businesses.

In this context, many studies acknowledge that supply chain management may achieve enhanced customer and economic value by synchronized management of the flow of physical goods and related information. This suggests that supply chain management has a goal to transform the “value” from sourcing to consumption. It requires integration of all entities within the organization, but also of the external partners. In order to meet the requirements of the end-customer, Slack, Chambers and Johnston (2010) explained that the supply chain needs to achieve appropriate levels of the five operations performance objectives: quality, speed, dependability, flexibility and cost.

In the supply chain, speed as one of the five operational performance objectives, can be understood in two ways. The first is how fast customers can be served, an important element in any business’s ability to compete in the world today. In order to achieve fast customer response, the companies need to over-resource raw materials or over-stock within the supply chain. The second perspective of speed is the time taken for goods and services to move through the chain. An important thing to mention here is that products that move quickly

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down the supply chain will have very little time to stay in inventory because they need to be distributed to the final customer.

This flexibility represents the agility of the chain, in other words it proves the ability of the supply chain to cope with changes and disturbances. An “agile” supply chain means that it is sufficiently flexible to respond and follow the changes that an end-customer demands, or supply capabilities of operations in the chain. This concept of agility provides images of previously discussed issues in the supply chain such as focusing on the end-customer, achieving fast throughput and responsiveness to customer needs.

Cost represents one of the most important objectives for having an efficient supply chain. Every organization wants to keep the cost on the lower end of the spectrum. Not only the cost incurred from each operation, but the supply chain as a whole incurs additional costs that derive from each operation in the chain by doing business with each partner. These additional costs may be explained as: cost for finding the right suppliers, making contracts for cooperation, monitoring and controlling suppliers’ performance, setting operations, transporting products between operations, holding and delivering inventories, etc.

3. Research Methodology

The primary data were obtained through a survey, carried out in domestic dairy companies in the Republic of North Macedonia and evaluated by using the tools of descriptive statistics and the methods of comparison, induction, deduction and synthesis. Two separate questionnaires were used to obtain data: one to assess the current supply chain management practices as the first level of analysis and two for the integration and performance. In both, the five-point Likert scale was used. The target groups of this survey were people from different sectors in the sample of companies. The questionnaire was sent via mail to 10 members each company, out of which, 3 members were from sales, 3 from production, 3 from administration and the last one was distributed to the commercial sales manager.

Before the distribution of the final version of this survey, it was pre-tested by 6 top management professionals to ensure the clearness and understandability of the content. Based on their suggestions and all recommendations gained from the pretest, some of the questions were reworked for the main reason to improve the clarity and validity of the questionnaires. The final version of the survey was distributed to 30 people who fully participated and answered all questions without any obstacles.

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4. Research Results and Discussion

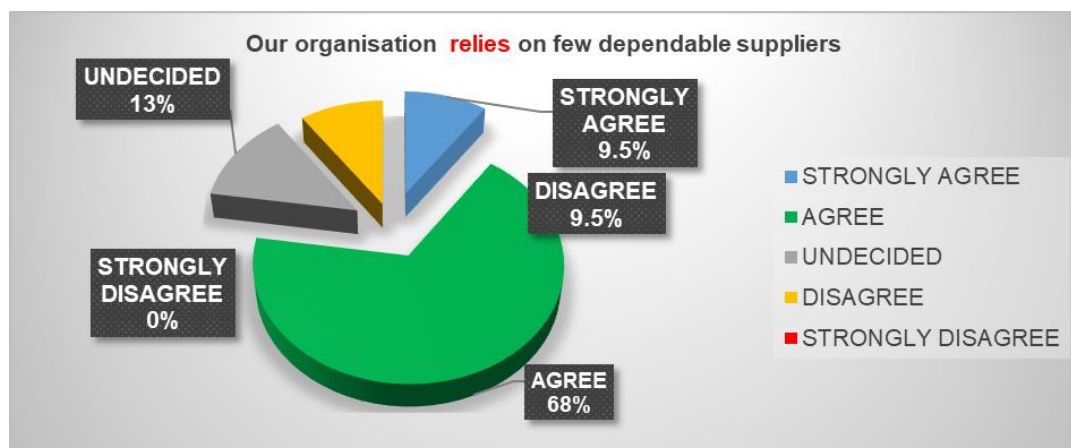
The dairy sector as a part of agribusiness represents one of the most promising sectors in North Macedonia. Based on the state statistical office of the Republic of Macedonia (publication for 2017), agribusiness (agriculture, forestry and fisheries) accounted for approximately 10% of the gross domestic product. The dairy enterprise nowadays is dominated by the private sector and the government usually plays the role of the regulatory body. The farms can be found almost everywhere across our country, except in the high mountainous regions because the cost for collecting milk would be very high and they won't be competitive on the market. The general structure of the milk production starts with the small firms – traditional farmers (75% of the total producers) who have small numbers of cows (usually 1-3) with low annual milk production of approximately 2-3 thousand liters per cow. The small productivity of the cows occurs due to inadequate breeding conditions and poor quality of feed. In general, there is a significant need for interventions in the primary production of milk by setting standards (good farm practice) that will determine the basic conditions for livestock breeding. Another problem is the low productivity and underdeveloped system for marking which is responsible for monitoring and suppression of diseases in domestic animals. These factors have a significant impact on the quality and safety of the milk production and they are in positive correlation with the price of the milk. Furthermore, the primary production of milk in Macedonia has had many problems for years. There is a need for improvement in the conditions for breeding, breed composition of the cattle population, research for microbiological quality of the milk and one of the most important factors is the availability of low cost feeds for the animals which is very rare. These conditions affect the quality and with this quality milk comes directly to the dairies where the problem continues in a very bad direction. The specific way of producing and transporting the milk makes the process of milk control very complex and very expensive which additionally makes the situation worse. Very few dairies have advanced conditions of hygiene and sanitation, and also there are many unregistered dairy processors which operate and sell their products on the market. The current standards, procedures and regulation for proper processing are not fully respected, input materials used by the facilities are not controlled and recorded in total, as well as monitoring of the own operation regarding the quality and safety of the products are common situations that can be found in Macedonian dairy facilities (Macedonia Chamber of Commerce, 2017).

Our empirical analysis starts with the position and dependability of their suppliers as one of the very important factors for every organization. Suppliers may play a significant role in the exchange of information which may be crucial in improving the supply chain performance and presenting a big opportunity for saving. In the following Figure 1 the responders answers on the first question are presented.

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The typology of neural networks is not well specified in network theory. From our research, we have noticed an attempt to perform a case classification based on the differences between networks in terms of the number of hidden layers held, the structure of the neural network, and the way the connections are between neural networks (representation in Figure 2). These links determine specific qualities, the potential of the model and the recognition of patterns. Simply put, they establish the learning capacity of the model (Kathmann, 1993).



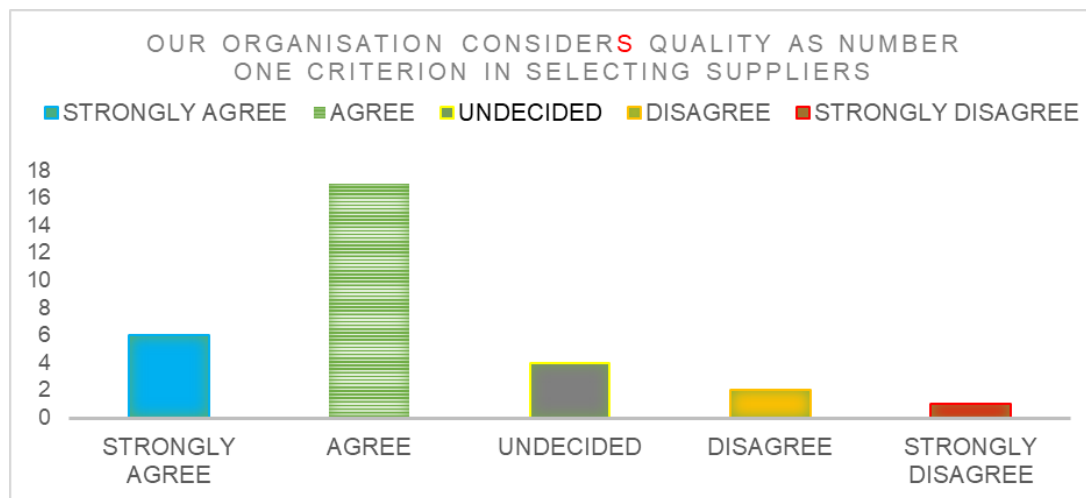
Source: own research

Figure 1. Number of dependable suppliers

It is obvious from the graph that more than half or 68% of the responders agree with the statement that their organization works with few dependable suppliers. An important detail is that 13% of the responders are not informed and based on the survey population those are workers in sales who are not in contact with the supplier of the organization. Only 9.5% or 3 responders answered that they disagree with the statement as well as the same number of responders who strongly agreed which is an insignificant number compared with the other results. Based on the received results, we can state that on average Macedonian dairy processors rely on few dependable suppliers.

In the next question, the responders were challenged to answer whether quality is important when choosing the supplier. According to Slack et al (2010) quality as one of the five operations performance objectives is very important because it's the beginning of a process that needs to pass through stages for delivering the final product. In that situation if the error is made at the beginning of the process it will be multiplied greatly until the finalization of the procedure and there are big chances that the final product won't satisfy the end customer.

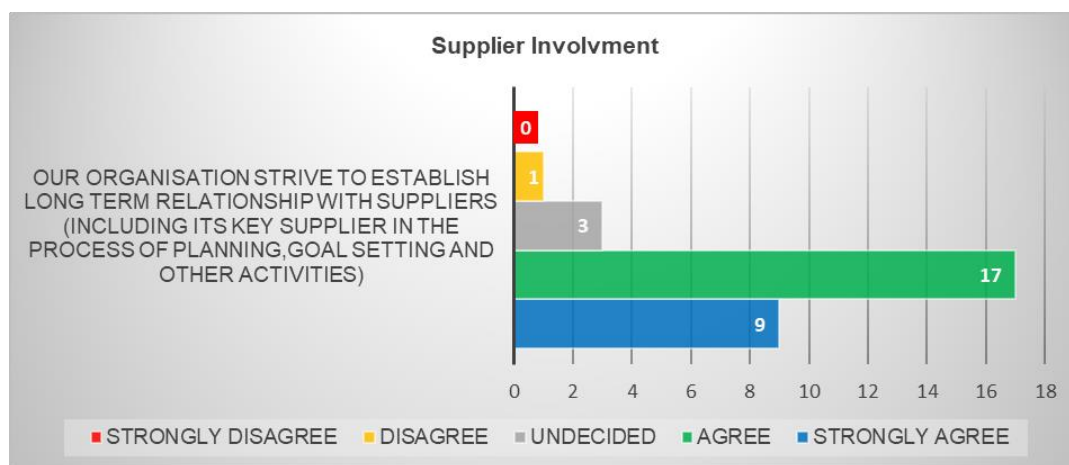
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Managing Supply Chain and Organizational Performance: An Evidence from the Macedonian Dairy Industry*Source: own research***Figure 2. Criterion for selecting suppliers**

The results in Figure 2 indicate that a huge part of the respondents agreed (76%) that quality plays a decisive factor when choosing the right supplier. An interesting detail is that out of 23 or 76% of the total responders who agreed with this statement, only 6 (26%) responders strongly supported that quality is number one criterion without any doubts. Additionally, there are 17 people who agreed but still have some reserved judgment that there are also other factors which may affect the decision regarding the choice. Only 3 responders disagree and 4 people remain undecided in regard to this question. There was only one recorded participant who strongly disagreed with the statement that their organization considers quality as number one criterion in selecting suppliers.

The following question is connected with the relationship time period and the position that suppliers have with the organization. Slack et al (2010) explained that every supply chain life is mostly determined by the relationship in which individual pairs “live and operate” in the chain. The level of the supplier’s involvement may further affect the organization, multiple points of contact on different levels will promote open dialogue and strong relation between the two organizations.

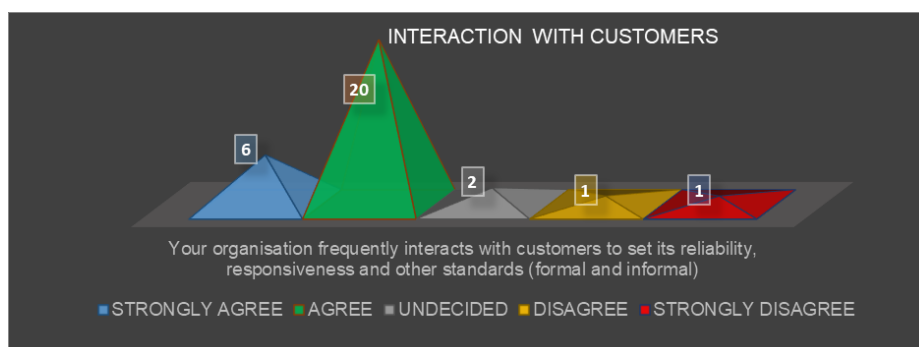
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The reason behind this question is that usually organizations that invest in long term relationships have mutual understanding and open goal setting with their partners. Langley et al (2012) argued that every long term relationship will boost more collaboration, cooperation and willingness to modify business objectives and practices. The effect of these statements are shown in Figure 3 where the responders answered the question in a positive and encouraging way. Significantly more people (86.6%) agreed that their organization invests in long term relationships and has an open information sharing system for planning and other activities with their suppliers. All this suggests that Macedonian dairy processors are focused on a better and stable future with trustworthy partners.

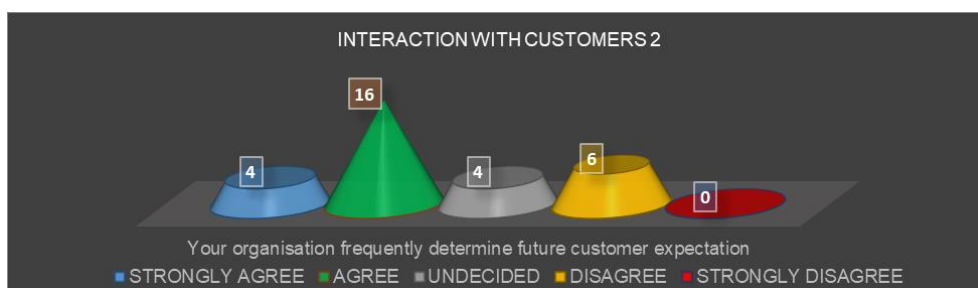
In the next paragraph the relationship that organizations have with their customers will be presented. Customers' opinion has a particularly high influence on the product price and demand, according to this, the economic status of the supply chain is driven by their customer expectation and needs (Dani, 1995). In our case we researched the interaction of organizations with their consumers in the field of satisfaction, determination, future expectation, and responsiveness to a certain note.

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Managing Supply Chain and Organizational Performance: An Evidence from the Macedonian Dairy Industry*Source: own research***Figure 4. Interaction with customers**

In the answers gathered from the survey we can recognize that Macedonian dairy processors invest in customer feedback and take care for their opinion in huge proportions. In the first question (Figure 4) more than 66% of the respondents agreed with the statements that their organizations frequently interact and measure the satisfaction of their customers by using formal or informal communications. The interaction of the customers may bring opportunities for better management of the business as well as guidance for further improvement or adjustments needed for generating additional profits. The importance of the interaction with the customers was further proved by the results gained from this question which were supported by more than 86% positive answers.

The other question concerning the interactions that the organizations have with their customers, deals with the ability of the organization to determine future customer expectations. Anatan (2014) pointed out that today's environment has changed dramatically and most of the companies encourage customers to give feedback which will be used for further improvement of the product.

*Source: own research***Figure 5. Interaction with customers 2**

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Same as the previous question the responders who agreed with the statement were predominant. However, an important piece of information was recorded by this question because 6 people stated that their organization wasn't able to follow or determine what their customers would expect in the future. This means that all information that organizations receive from their customers is rather incomplete or the habits and way of living in our environment change rapidly. Additionally, the number of undecided and people who disagree with this statement is one-third (more than 33%) of the total responders, which represents a potential threat of loss of new customers and decrease in the demand of the products/services that organizations offer. The relation with the customers represents one of the sources for achieving competitive advantage by generating customer satisfaction and loyalty as well as providing the organization with special advantages which can be used as a barrier for competition (Anatan, 2014).

Trading partners are a driving force in the management of every supply chain. Since that, the supply chain represents the management of a big network of autonomous or semi-autonomous business entities which are collectively responsible for all activities associated with one product or services (Swaminathan et. al, 1996). In Table 1 we can find statements which are connected with the relationship that organizations have with their trading partners.

Table 1. Relation with trading partners.

STATEMENT	Relation with Trading Partners				
	ANSWERS				
	Strongly agree	Agree	Undecided	Disagree	Strongly Disagree
Our organization and its trading partners exchange information that helps establish business planning and potential issues that may affect their business.	6	20	2	2	0

Source: own research

In regard to the question about relations with trading partners, a huge percentage of the responders (86.6%) agreed that their organization fully informs their trading partners and exchanges information about establishment of business planning and potential issues that may represent a threat for the business. This was also elaborated by Child and Faulkner (1998), stating that partners need to be open and transparent about their motive for collaboration which will help in the process of achieving mutual interest. These results further confirmed the fact that Dairy processors put a high level of importance in the relation with their trading partners. Even if people who agree with the statement dominate, there are some responders (6%) who disagree and point out that there is room for improvement in this field. Choosing the right partner may be a crucial step for boosting competitive benefits or lead the organization in insurmountable difficulties, that's why the organizations need to be very

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careful with whom they enter into partnership or exchange important information with (Geringer, 1991).

Even if the trading partners are open and communicative, the information which they are sharing needs to be transparent and accurate which will determine the efficiency and effectiveness of the supply chain (Porter, 1985). The list below consists of statements about the way of exchanging information in the Dairy field in the Republic of North Macedonia.

Information exchange between our organisation and its trading partners is timely, accurate and complete

STRONGLY AGREE	5 people	16.5%
AGREE	14 people	47%
UNDECIDED	6 people	20%
DISAGREE	5 people	16.5%
STRONGLY DISAGREE	0 people	0%

Source: own research

Figure 6. Information exchange

The first statement provided in Figure 6 describes whether the information exchanged is timely, accurate and complete. More than 60% answered that the information fulfills the principles, but 5 responders or 16.5% disagree with the statement. This indicates that there are some points in the organizations that may threaten some business processes as well as the competitive advantage (Handfield, 2002). On the other hand, the second statement deals with the other two characteristics which are crucial for the information to be complete.

Information exchange between our organisation and its trading partners is adequate and reliable

STRONGLY AGREE	4 people	13%
AGREE	22 people	73%
UNDECIDED	2 people	7%
DISAGREE	2 people	7%
STRONGLY DISAGREE	0 people	0%

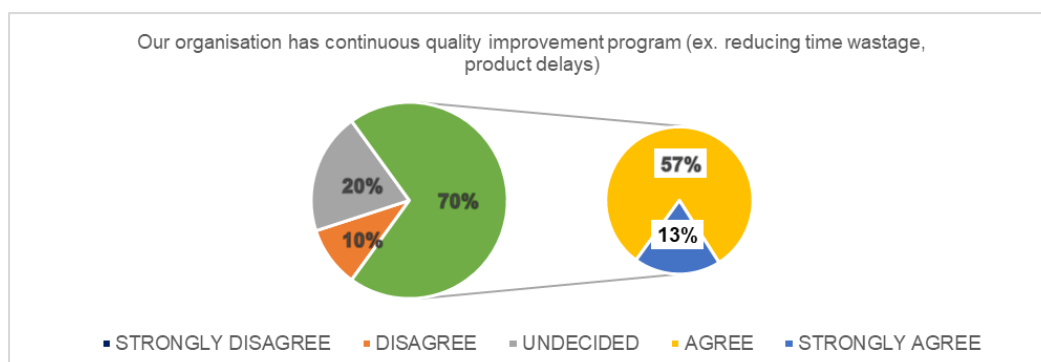
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*Managing Supply Chain and Organizational Performance: An Evidence from the Macedonian Dairy Industry***Figure 7. Information exchange 2**

The results presented in Figure 7 expressed that more than 85% of the respondents agreed with the statement that information which is exchanged is adequate and reliable. It boosts a close relationship with the partners by building additional confidence which will reduce the potential risk of losing something vulnerable or uncertainty about the future. Additionally, there are 6 respondents (first statement) that are still undecided about the accuracy of the information which are shared between trading partners. This gives a picture that there are still some people who are in doubt whether they should have trust in the partner or not.

Quality performance of every player in the supply chain is necessary for achieving good final results which may be of great importance for satisfying the end customer. According to Slack et al. (2010) quality is one of five operations performance objectives that need to be maintained on an appropriate level which will be equal to what customers expect from the product. In the following graph we can see how much the Macedonian dairy processors take care about quality in their supply chain.

*Source: own research***Figure 8. Quality improving program**

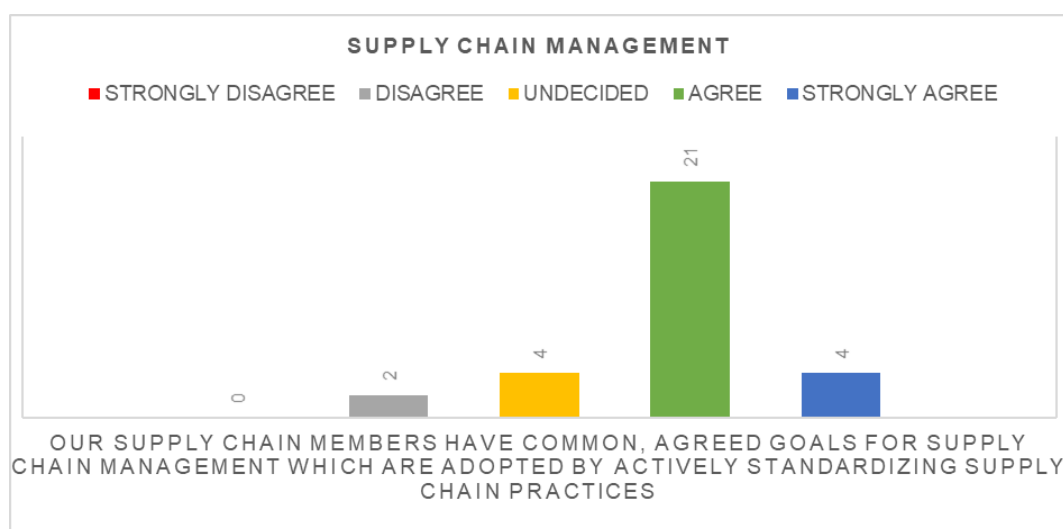
The graph (Figure 8) easily explains that 70% of the responders which answered this survey answered positively in regard to the quality improving program in their organizations. There are more respondents who “agreed” with the statement (57 %) who still have some thoughts that there is room for improvement in their organizations. Only 13% of the responders answered that they “strongly agree”, compared to the 10% who disagree with this statement, which provides the information that there is still a need for further adjustments in the organizations for a continuous quality improvement program. Furthermore, there are 6 people, representing 20%, who are undecided or literally uninformed about the current quality improvement program in their organizations. Quality also participates in executional cost

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drivers which play an important role in the operational decisions of the organization (Riley, 1987)

The definition of supply chain management clearly emphasizes the need for a common and central goal that needs to be accomplished by all players affected in the chain. It is a process of managing different business entities which are collectively responsible for accomplishing a certain goal (Swaminathan et al., 1996).



Source: own research

Figure 9. Supply Chain Management

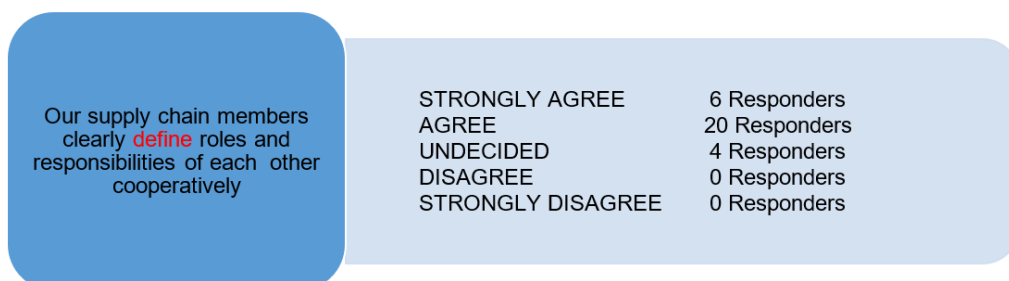
According to the bar graph (Figure 9) we can recognize that dairy supply chains in the Republic of North Macedonia have very stable management of the whole chain. The huge percentage (70%) of responders who agreed with the statement proves that supply chains in the Macedonian dairy sector operate in a good harmonized way which ensures a bright future. Furthermore, it was proven that all sectors or players in the supply chain work together to achieve certain goals and are also actively involved in proposing practices and operations that may be beneficial for the organization. There are 2 responders (6%) who disagree with the statement and also 4 people (13%) who are undecided in relation to this issue. However, generally there are more than 83% of the total responders that have positive views in regard to this statement which confirms the right way of managing Macedonian dairy supply chains.

Questionnaire number two is connected with the integration and performance of the supply chain. The process of defining roles and responsibilities in the organization will clearly identify and show who and what needs to be done (Kahraman and Öztayşi, 2014). The status of every organization in the supply chain will show their contribution to the joint success and achievements of the supply chain. Neild et al. (2004) also explained that if one organization

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works together and shares risk and rewards, will be far more successful in the way of achieving a better competitive advantage.

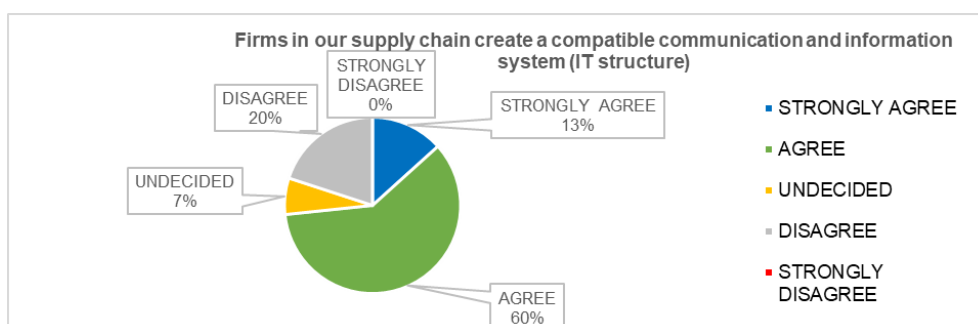


Source: own research

Figure 10. Roles and responsibilities in the supply chain

Figure 10 shows the results received from the survey about the roles and responsibilities of the members in the supply chain, and how organized are the supply chains of the dairy processors in the Republic of North Macedonia. In the statement about the roles and responsibilities of the members in the supply chain, 26 out of 30 responders positively agreed that there are clearly defined roles and responsibilities that they have for a particular position in the chain. This huge percentage (86.6%) confirms that supply chains in our country are pretty much organized and all members are appointed to do a certain job which brings some responsibilities for which they need to cater to. However, there are 4 people (13.3%) who are undecided or uninformed about their role and responsibility in their organization, which provides an explanation that there is still room for improvement in this area of supply chain management of dairy processors in the country.

Nowadays IT structure represents one of the leading resources and key for creating sustained competitive advantage (Barney, 1991). The combination of the IT with other organizational resources may bring huge benefits for the company. Wade and Hulland (2004) explained that when IT and other complementarities (resources) work as one smooth “machine” will lead the organization to achieve competitive advantage far more stably and quickly.



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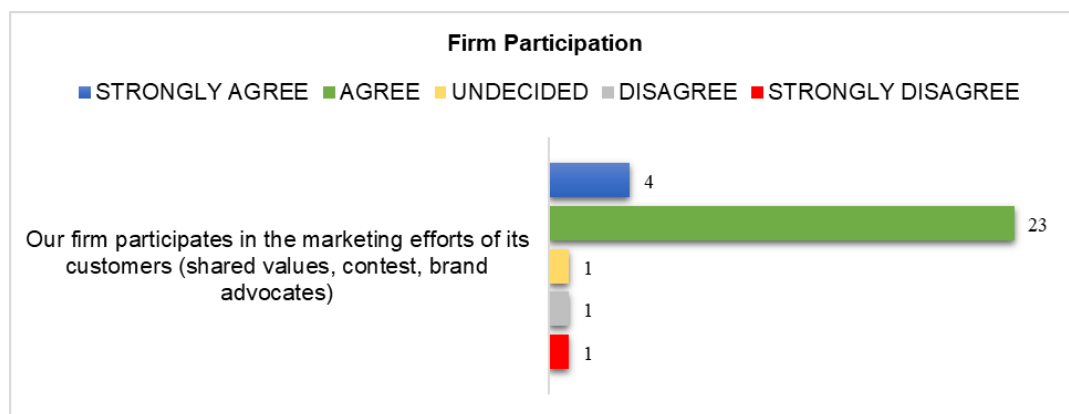
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Source: own research

Figure 11. IT Structure

The percentage display of this pie graph (Figure 11) showed that 73% of the respondents agreed that firms in the supply chain have a compatible IT structure which helps to achieve better communication and sharing of information. Still, there are 20% of responders who stated that their IT structure has not achieved a satisfactory level. This detail is noteworthy because it suggests that the information systems do not work properly and all resources that the organization has, may not be used at full capacity. This brings the organization in a position of decreased competitive advantage and increased chance for some losses.

There are different types of relationships between entities in the supply chain, starting from the simplest form of relationship in which collaboration and integration are on a very low level, to relationships in which all participants are willing to modify their practices for achieving long term goals and objectives of all affected parties (Langley et al, 2012). On the other hand, the market orientation of one organization may provide a high competitive advantage and create a superior value compared to their competitors. This process will provide a clear picture of what customers need and, based on this, a way to modify the activities in order to satisfy the needs of the final consumer (Kohli, Bernard and Jaworski, 1990).



Source: own research

Figure 12. Firm Participation

The bar graph (Figure 12) provides information about the involvement and level (open/closed) of relationship that the organization has with their partners and customers. In regard to the participation of the organization with their customers, it is obvious that dairy supply chains have pointed high importance of the customers' perceived values. Out of the 30 responders who participated in this survey, 27 people or 90% clearly stated that their organization perceives the marketing efforts of their customers and modifies the activities in order to

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satisfy their needs. This result provides a picture of organizations that invest in their customers and take into account all their suggestions and comments. Managing the dairy supply chains in this way may only bring positive results and a bright future for all members in the chain (Kohli, Bernard and Jaworski, 1990).

Even if the organization performs well and moves in a good direction, the ability to perform under stress may complicate the situation on a large scale. The flexibility of the chain shows how agile the whole chain is to respond to some capabilities of the operation under unexpected circumstances. Organization's ability bars (Figure 13, 14 and 15) covers the three statements connected with the ability of the supply chain to react or adapt under different situations that affects the entire organization.

*Source: own research*

Figure 13. Organization's ability to deal with poor manufacturing performance

The first statement shows the agility of the chain to respond under poor manufacturing where 23 responders have stated that their organization has the capacity to overcome this problem, but there are 7 participants (23%) who pointed out that in some situation the poor manufacturing presents a big challenge and problem for some organizations that can be solved easily. Even if the number of responders who reacted positively to this statement is higher than those who reacted negatively, manufacturing in the dairy industry has a very important role because without the product all other sectors are useless for generating profits.

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Managing Supply Chain and Organizational Performance: An Evidence from the Macedonian Dairy Industry*Source: own research***Figure 14. Organization's ability to deal with poor supplier performance**

The second statement (Figure 14) deals with the ability of the chain to respond to poor supplier performance (low quality). If we take into consideration that the three leading dairy processors in most of the situations will have agreements with more than one dependable supplier with good quality, the answers came as expected and proved that 83% of the responders stated that their organization will have the capacity to overcome this problem. Additionally, 9 responders (30%) strongly supported that their organization has an excellent ability to solve this problem without any further delays. However, there are still some responders who pointed out that the lack of quality suppliers will bring some problems in their operation.

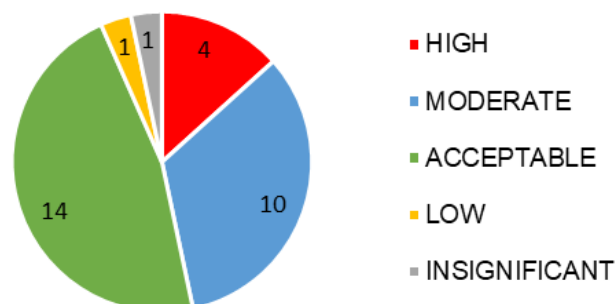
*Source: own research*

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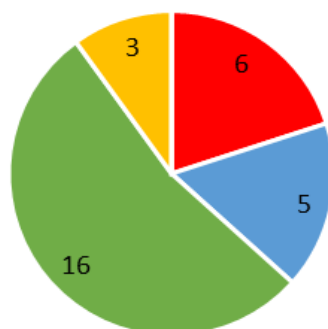
*Managing Supply Chain and Organizational Performance: An Evidence from the Macedonian Dairy Industry***Figure 15. Organization's ability to deal with new product, markets or competitors**

The last statement (Figure 15) takes into account the ability of the organization to react to a new product, competitor or market. The leading position of the top three companies in the sample was further confirmed by the results received, which strongly proves that in 93% of the situation (excellent, good and acceptable), these organizations will find a solution to deal with the new product, market or competitor. Furthermore, 73% of the responders suggested that their organization has an excellent (30%) to good (43%) ability for solving these kinds of problems.

Cost, as one of the top objectives for having an efficient supply chain, should be managed in an efficient way that will provide maximum productivity at minimum expense. This represents a top priority for every supply chain that plans to achieve better competitive advantage and better position on the market (Slack at al, 2010). There are different types of cost, however not only cost incurred from operation but also there are additional costs that affect the operation of the organization such as: transportation between operations, holding and delivering inventories, choosing the right supplier or worker, etc.

Total cost of distribution, including transportation and handling cost**Figure 16. Total cost of distribution***Source: own research*

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*Managing Supply Chain and Organizational Performance: An Evidence from the Macedonian Dairy Industry***Total cost of manufacturing including
labor maintenance and rework cost****Figure 17. Total cost of manufacturing***Source: own research*

In this research we included two types of cost, related to distribution and manufacturing process of dairy processors. Total cost of distribution in which transportation and handling cost are included (Figure 16), showed that there is a tendency of acceptance toward moderate and high level of expense which provides a signal to the organization for some adjustments. The first pie graph explained in Figure 16 is almost evenly spread between the positive side consisting of: acceptable, low and insignificant (16 responders), and the negative side consisting of moderate and high level of cost (14 responders). This detail suggests that in the field of distribution and logistics there is still room for improvement and adjustments. On the other side, Figure 17 presents the total cost of manufacturing which covers a big percentage of every dairy processor. The answers provide the explanation that more than 63% of the dairy processors have tolerable cost (acceptable and low) and the rest (37%) have a moderate (5 responders) to high (6 responders) level of manufacturing cost. Some researchers (Slack et al, 2010) suggested that the cost can be reduced by reducing the number of workers or suppliers, however the second option is to increase the number of production and decrease the marginal cost.

Key performance indicators are the base on which any organization or member in the supply chain needs to use as a guideline for continuous improvement and efficiency. In order for one organization to achieve its set goals, they need to uninterruptedly follow, report, and react to the key performance indicators which will provide meaningful information about accomplishment or progress of key goals (Parmenter, 2011). In the table below there are presented the top five indicators which need to be useful in the process of forming a picture about future results of the organization and supply chain.

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*Managing Supply Chain and Organizational Performance: An Evidence from the Macedonian Dairy Industry***Table 2.** Supply chain performance.

SUPPLY CHAIN PERFORMANCE					
INDICATORS	ANSWERS				
	EXCELLENT	GOOD	ACCEPTABLE	POOR	VERY POOR
Return on Investment (ROI)	3	9	8	8	2
SALES (average)	6	10	12	2	0
"On time" deliveries	11	4	10	4	1
Shipping rating (based on errors)	3	10	12	4	1
Customer rating (based on complains)	8	11	9	1	1

Source: own research

Starting from the first indicator Return on Investment (ROI) the results of the survey express that there are different opinions in regard to investments which bring a satisfying return. If we take the first three answers (excellent, good and acceptable) as return which can be classified as efficient, we can easily conclude that in the dairy industry most of the investments or approximately 66% are good investments with expected return. Still there are 8 responders who stated that the return is poor as well as 2 people who are not satisfied at all with the return received from the investment. Knowing the fact that we selected the top three dairy processors in Macedonia, the results received from average sales of the Dairy processors were expected. Almost all responders, except 2 people, answered positively that in their organization sales are excellent (6 responders), good (10 responders) and acceptable (12 responders) which provides a good overall picture about Macedonian dairy processors. On time delivery is also one of the five operations performance objectives which are important for satisfying the end customer (Slack et al, 2010). The answers pointed out that more than 83% of the responders are satisfied with the on time deliveries which suggest that supply chains in the dairy sector in Macedonia systematically manage internal business logistics activities for efficient delivery to the final consumer (Coyle, Baldi and Langley, 1996). The next statement is connected with the error occurred in the process of shipping. Quality is another performance characteristic important for achieving the appropriate level for fulfilling customer needs. Responders stated that the level of shipping errors is satisfactory because more than 83% are happy with the current position of the errors which are low. Only 5 persons or 17% of the total respondents expressed that there are shipping errors which cannot fully satisfy the end-customer. The last statement is concerned with the customer rating based on complaints for the dairy processors in the Republic of Macedonia. The answers to this question proved that most of the customers have positive perception for the three dairy processors that we investigated in this thesis. The title that these processors have as market leaders with highly positive customer satisfaction was supported with more than 93% sufficient grades for fulfilling customer expectation (excellent, good, acceptable).

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5. Conclusion and Recommendation

Supply chain management needs to be used as a guideline for the organization on how to create a high effective system by adjustment in the business processes and relations, creating a high performing system for delivering increased value and professional level of sharing information for the final goal of achieving competitive advantage for the organization. Many researchers proved that the management of the supply chain needs to provide in-deep communication and coordination between different sectors in the organization in order to meet the requirements and appropriate levels of five operations performance crucial for fulfillment of end-customer need: Quality, Speed, Dependability, Flexibility and Cost.

Overall, the dairy sector in Macedonia shows a need for intervention and reaction in the primary production of milk for setting standards that will determine the basic condition for livestock breeding. The low productivity and underdeveloped system significantly affect the quality and safety of the milk production which is additionally reflected on the price of the milk. Macedonian farmers need to provide better quality which will ensure better price for milk and with that to improve the overall position of the dairy sector in North Macedonia. The supply chain of Macedonian dairy sector explores the market for finding possible solutions to eliminate their possible threat which will bring better competitive advantage. The stability with the supplier is a priority because it is the source of existing. The first recommendation is to increase the supplier involvement which will bring additional speed in the chain and reduction in complexity and unexpected cost by promoting mutual understanding and long term relationship. Dairy supply chains in North Macedonia put high importance on their customers as well. The interaction with the customer for reliability and responsiveness as well as frequent measurement and evaluation of their satisfaction are some of the measures taken on a higher level. There is a need for improvement and further investigation in the field of future customer expectation. The organization first needs to do deeper research and development of the customers' needs, then to use their power and offer something new and attractive on the market. The opinion of the customer is easily adjustable if the value that they receive is paid for at a reasonable price. Another important topic is the relation with the trading partners which was excellently implemented by the whole chain. The survey proved that the trading partners always keep their partners fully informed about the events or issues that may affect the business. However, the exchange of information sometimes is inaccurate, incomplete or not delivered on time. The recommendation will go in a direction to improve the quality and importance of the information as one of the most powerful tools nowadays. The IT sector also needs to provide the newest updates and trends for improving the way of communication and exchange of information in their organization. A misunderstanding in the communication may lead to straight failure and chance of losing crucial capabilities. The program for continuous improvement in the quality of working will provide future stability and prosperity, but also the increase of waste needs to be strictly controlled. Organizations need to change their current push strategy by acquiring a pull strategy in which most of the demands will be forecasted. Another recommendation will be in the area of financing capital equipment by the member of the supply chain. Members of the chain may have some internal

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agreements for financing capital equipment with some duty and obligations for the debtor. This will provide a more liquid and open supply chain in which the parties will be somehow obliged to work together for certain periods of time. In the area of shared risks and rewards, there is a need for implementation of certain standards which will boost members of the chain to chase the objective of the whole chain rather than individual ones. Finally, the picture of the company is always painted by its performance. The cost structure in the Macedonian dairy supply chains needs significant adjustments especially in the process of distribution. Most of the companies are facing acceptable to moderate levels of cost which need to be decreased in the near future in order to increase the efficiency of the sector. The recommendation is to keep the current cost on a stable level (fixed) and with the same resources to increase the production which will boost the financial wealth of the organization. Additionally, it will increase the efficiency of the distribution and all other associated costs, by using the same resource to distribute more products. On the other side of the story are the most crucial indicators which provide information about the progress of the key goals. There is a need for improvement in the sector of return on investment which in general has acceptable results, but still there is room for additional research and investigation before entering into certain investments. Sales and "on time" deliveries record a favorable result which needs to be retained in the same or better position. In regard to shipping and customer rating, dairy organizations in North Macedonia have an acceptable level, but taking into consideration the rapid change in the habits of the customer as well as increasing imports of milk and dairy products, the input of additional value will always be welcomed positively by the customer. The aim of this paper was to show how managing the relationship in the supply chain can be a source of competitive advantage. In general, Macedonian dairy organizations are informed about the leading standards and new trends in the way of living.

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