**National Research University**

**Higher School of Economics**

Faculty of Business Informatics

Department of Corporate Information Systems

DRAFT

of the paper

“Integration of MS Dynamics Nav branch solution in
a network of auto dealer centers”

 Student: Melentyeva Anastasiya

 Group: 472

 Argument Consultant: Morgunov A.F.

Language Consultant: Bagramyanz N.L.

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**Abstract**

The automotive market is changing and experiencing a new phase of growth. All such factors as strong competition, more sophisticated demands, and 21st century technologies change the way of leading business. This study presents the description of information system which solves the main issues of auto market by combining the standard functions of Microsoft Dynamics NAV and the proven commercial management options with special extensions designed for the automotive sector. The study analyses the main business-processes running in an auto dealer center and suggests possible ways of system adaptation and improvement such as a tool for calculation of spare parts presence.

Content

[Introduction 4](#_Toc348731445)

[Chapter 1 6](#_Toc348731446)

[1.1Company description 6](#_Toc348731447)

[1.2 Information system description 6](#_Toc348731448)

[1.3 Modules overview 7](#_Toc348731449)

[Chapter 2 9](#_Toc348731450)

[2.1“Spare parts purchasing” business-process text description 9](#_Toc348731451)

[2.2“Spare parts selling” business-process text description 9](#_Toc348731452)

[2.3“After-sale service” business-process text description 9](#_Toc348731453)

[Chapter 3 11](#_Toc348731454)

[Conclusion 13](#_Toc348731455)

[List of references 14](#_Toc348731456)

# Introduction

Modern auto business market is a fast growing and changeable environment with a high level of quality and competitive requirements. Therefore, the process of choosing appropriate software for company needs is considered to be a complicated and multistep choice.

Nowadays, local market has an access to a variety of both local and foreign information system products for business-processes control and management. However, if at the beginning of Russian auto market foundation companies did not require a high level of relevance to a certain car mark or a certain concern, at this moment the expectations about information systems are becoming more specified.

This client's approach to a more unique and individual way of information system development explains the actuality of the work and defines the topic of this piece of academic writing. In this work, the example of software in a certain auto dealer center will be considered and deeply analyzed, suggestions of possible modifications will be made and predictions about re-engineering process will be announced.

The topic has gained its actuality due to the rapid growth and expansion of a local auto market and consequently due to the growth of requirements level to a soft individualization.

The object of this study is an information system for business-processes management in the auto dealer center. The subject of this study is a level of system correspondence to all the business-processes running in the company and the extent of a possible system modification. The primary aim of the work is a development and explanation of possible ways of system modification. The main tasks set in this work are:

1. Deep investigation and analysis of current company business-processes
2. Analysis of information system correspondence to existed business-processes
3. Development and explanation of possible ways of system modification

Major sources and information gathering methods are:

1. Analysis of the marketing and functional documentation of Incadea system

2. The study of literature describing business-processes modeling methods and techniques

3. Paper analysis and comparison of different information system for auto market

The logic of the study is the following: first of all, the brief overview of company structure will be provided, secondly, the information system description along will be given, the third step is the main business-processes investigation, finally, the possible ways of system improvement will be suggested.

In order to make this piece of academic writing easy to follow and understand it is necessary to provide key terms and definitions:

“Microsoft Dynamics NAV is a complete enterprise resource planning solution from Microsoft that delivers comprehensive business management functionality for small and midsize businesses”. (Microsoft documentation, 2011 p.1)

“Information system is a combination of hardware, software, infrastructure and trained  organized to facilitate planning, control, coordination, and decision making in an organization”. (Kenneth C. Laudon, 2005 p.24)

“A business process is a collection of related, structured activities or [tasks](http://en.wikipedia.org/wiki/Task_%28project_management%29) that produce a specific service or product for a particular customer or customers”. (Microsoft documentation, 2010 p.5)

# Chapter 1

## 1.1Company description

Key ways of company activity are three main areas: car and spare parts selling, after-sales service. The company is a one of the leading world providers of commercial transport solutions which has its headquarters in Moscow and Saint-Petersburg; moreover, its network covers the whole territory of Russian Federation and has its branches in more than 20 cities around the country.

Main processes running in every auto dealer center can be seen from the diagram:



Diagram 1. Main processes of company’s activity

## 1.2 Information system description

Nowadays, a network of auto dealer centers uses the following software:

1. 1С – Accounting:8,
2. Operation system Windows 7 Enterprise,
3. Microsoft Office

Brach solution for auto market Microsoft Dynamics Nav – Incadea is considered to become a prospective information system for the company.

“Incadea has been designed especially for car dealers, workshops and importers and enables them to optimize the internal processes and workflows. It is perfectly adapted to everyday working practices and seamlessly integrates dealership departments and business procedures to help capture, consolidate, manage and share data more effectively and efficiently. Incadea is designed to help a dealer center run its business more efficiently and successfully. This is possible by combining Microsoft Dynamics NAV - a successful and proven ERP System - and incadea's great international experience in the automotive business”. (Incadea brochure, 2011 p.2)

This information system provides maintenance of following information modules:

1. Financial adjustment

2. Spare parts

3. Cars

4. Auto-sale service

5. Staff

6. Data communication

For more detailed consideration and documentation of business-processes covered by the system it is necessary to give a minimal description and functional component of key system modules: spare parts, cars, after-sale service.

## 1.3 Modules overview

#### Spare parts module

“Spare parts” is a central Incadea module. It improves the efficiency, optimizes company workflows. The logical way in which data is handled in Incadea reduces the workload. Incadea can support multiple makes, multiple inventories and multiple branches and therefore is suitable for all corporate structures. The manufacturers' parts catalogs and price information can be integrated in the system.

#### Vehicle selling module

Vehicle sales sphere is a complex area. Therefore, Incadea automotive experienced software focuses on transparency coupled with easy data access. The entire sales process chain is easily identified and traced. All vehicles are managed in a clearly structured table.

Car selling is a sophisticated, multi-step process which provides work with either new, demo or used automobiles. The system allows users to put all these existed types of automobiles in the data base as well as the automobiles which will be created with a help of hand-input. Once a car is generated by a user, it is available for the whole period of auto time service.

Car selling module is responsible for purchase order calculations and preparation. These orders can be generated automatically according to other related documents in the system or they can be created by users. Rules and different adjustments for price-lists can vary according to a certain auto mark.

#### After-sale service module

This system module takes responsibility for work with commercial and warranty service orders. The after-sale section part is a key part of the system due to the fact that quality of service works is the most important indicator of competitive advantage of auto dealer center.

The module is directly connected with spare parts section, as in the performance of services there are two main types of activity: implementation of service work, installation or replacement of spare parts.

The main processes running in the auto dealer centers are:

1. Spare parts selling and purchasing
2. Car selling and purchasing
3. Commercial and warranty after-sale service

In this work, the attention will be paid to such processes as spare parts usage for selling and for after-sale service.

## Chapter 2

## 2.1“Spare parts purchasing” business-process text description

The process of purchasing begins with posting spare parts along with documents and delivering them to a stock. After this all the parts migrations have to be reflected in the system.

The first step of is an order generation in a section of spare parts purchasing. Before the order generation it is necessary to confirm that there are both provider card and item card in the system. Otherwise, it means that they have not been used before and they have to be created by the user.

After filling the order with relevant information about spare part and its provider, the user can fix the order in the system by posting a shipment and an invoice.

After passing all the stages of purchasing process, a spare part is delivered to the stock. This result is reflected in two main ledgers.

Item ledger entry- the main ledger where all the quantitative operations are logged.

Value ledger entry- the main ledger where all the cost operations are logged.

## 2.2“Spare parts selling” business-process text description

 The process of parts selling starts with an order generation in the system and filling it with the relevant data about a client and an item. If there is no information about the customer, user has to create a new client’s card in the system. Since the order is generated, a stockman checks the presence of necessary parts for the order in the warehouse. In a case of parts absence, he creates a new spare parts purchasing order to a supplier.

After receiving demanded parts to a sale area the user has to post a real shipment of spare parts and documents.

Since all the operations are done, the user can reflect all the actions of spare parts movement in the system.

After a brief characterization of the main business-processes running in the department of spare parts selling, it is necessary to describe auto-sale service process which has a direct connection to all the kinds of work with parts.

## 2.3“After-sale service” business-process text description

There are two main types of service orders in the system:

Commercial type is a type of service order, which is issued on the client or his authorized representative. The commercial service is provided as repair and installation of necessary spare parts.

Warranty order is a type of service order, which in part or in full is issued on the company. In the system the service order is opened on the name of the owner of a car, while billed to the auto companies.

Sequence of actions for both types of orders is quite similar. When a client applies to a service center, the responsible manager creates a new work order and submits there the data of a customer. If there is no information about the customer, user has to create a new client’s card in the system before opening a new order. Moreover, the card of any car has the status “client’s auto”.

Since the order is generated, a stockman checks the presence of necessary parts for the order in the warehouse. In a case of parts absence, he creates a new spare parts purchasing order to a supplier.

After that, there is a calculation of exemplary performance time and finalizing details with the client. If a customer has no claim to the conditions of the service implementation, the car goes to a repair zone.

After completion of repair works, condition of the vehicle is estimated by the client. If there is no claim, the system takes into account a service order, and the car with the appropriate set of documents will be given to the owner.

Chapter 3

The results of the study are the suggestions of development a new functional tool for calculating the number of spare parts needed for requisition. This need is considered to be a necessary part of efficient work with spare parts due to the fact that automatic calculating tool will provide an opportunity to have a minimum number of parts anytime. The calculating system can rely on the following figures and indicators:

1. Frequency Order: order frequency in months
2. Delivery time: the frequency of parts arrival in months
3. Time: The time for parts posting in months
4. Safety Stock: emergency reserve in months
5. Maximum Order: The maximum time by which to procure parts
6. Minimal amount: the minimum amount of stock availability

Minimal Time = Frequency Order + Delivery + time + Safety Stock

Maximal Time = Frequency Order + Delivery + time + Safety Stock + Order Horizon

These indexes provide the following calculations which can be used for generating the order.

Order point = Min. Time \* Sales Forecast

Maximum Availability = Max. Time \* Sales Forecast

The presented calculations and indexes are the primary suggestions for developing a new functionality. It is necessary that a more thorough study of the topic should be performed in a final thesis.

Now it is necessary to turn to the structure of the graduation work.

The work will be divided into three main parts:

Chapter 1. Theoretical part

1.1 Market description

1.2 Company description

1.3 Information system overview

Chapter 2. Analytical part

2.1 Analysis of main business-processes

2.2 Business-processes modelling

2.3 Analysis of system possible improvement

Chapter 3. Practical part

* 1. Requirements formation of a new functionality
	2. Business-processes modelling
	3. Mathematical justification
	4. Results analysis

The first chapter is a theoretical part which is devoted to the deep overview of the subject. First of all, it will reveal the situation on the local auto market and the tendency of its development. Secondly, the company description will be given. Thirdly, the overview of the information system will be described and its main functional modules will be investigated.

The second chapter is dedicated to the business-processes analysing and modelling. Initially, the text descriptions of the main business-processes will be shown. Then, all of them will be modelled and analysed. Finally, suggestions about system improvement will be announced and substantiated.

The final chapter is devoted to the description and development of a new system tool. The first step will be a formation of requirements for a new calculating functionality. The second step will be a modelling of a new business-process generated by the usage of a new system tool. The third step will be a mathematical justification and calculations of chosen methods of tool development. The final step will be a result analysis after the implementation of a new functionality.

All the predictions and suggestions about a possible system improvement will be given in the conclusion.

# Conclusion

Taking everything into account, it is evident that the most important factor of effective auto dealer center work is the presence of spare parts in a warehouse due to the reason that they are used in two main company business-processes. Moreover, this conclusion is supported by the fact that all the auto dealer centers in the market provide almost the same number of services and goods. In this case, the speed of service performance which directly correlates with the usage of spare parts is the key success factor and ultimate competitive advantage.

Therefore, the development of a new functional sector for calculating the number of spare parts needed for requisition is an obvious and reasonable step of system improvement. This system tool can provide a better quality of service as well as significant increase of service performance speed, and helps to ensure the dealer has the right item at the right place at the right time. As a result, this purpose will be discussed in more details in the final work and it will be the main issue of development, analyses and documentation.

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