



Research Case Study: KomarTrans

Jan Tichý

Vysoká škola obchodní v Praze, Praha, Česká republika

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Abstract: The aim of the case study is to describe the implementation of the Cargy system in the company KomarTrans, which focuses on transport, forwarding and logistics services. It is true about this area that companies operate in it in a very competitive environment. At the same time, it is a dynamically developing field. For this reason, it is important to introduce such innovations that help to optimize the ratio between costs and output of the company. Currently, these are innovations based on information technology.

Keywords: innovation, transport, business, competition, competitiveness

Company presentation

KomarTrans s.r.o. is a company founded in 1991 dealing mainly with transport, storage and service with its headquarters at Třebovská 115 in Ústí nad Orlicí. The company KomarTrans was founded in 1991 under the name "Jaroslav Komárek - autodoprava", its first vehicle was a used Fiat Ducato Maxi car, purchased in Hamburg. The first orders were implemented in the following countries: Austria, Germany, Slovenia, Holland and Ukraine. The company gradually grew and acquired new customers. In 1997, they were, for example, the companies Perla, a.s. Seba, Veba, Tepna, Centrotex, Juta, Karosa, Pletpo UnO, or Ecetex, i.e. companies for which KomarTrans ensured the transport of mainly textile materials. Another area of development arose with demand from the machinery industry, foreign customers are gradually appearing, one of the first being Moldex/Metric, which deals with protective work equipment.



Figure 1: Illustrative photo, source: www.komartrans.cz

The research case study was developed as part of the Research and teaching case studies project as a tool for the transfer of current knowledge from business practice to the academic sphere (2020-1-CZ01-KA203-078348). The project was supported by the ERASMUS+ program (KA203 – Strategic partnerships in the field of higher education). The research case study is one of eight research case studies. Based on the analysis of individual research case studies, a multiple comparative case study is developed. The theoretical and methodological framework for creating case studies is presented in a multiple case study.

Research Case Study: KomarTrans

In the following years, the company is strengthening its fleet due to the expansion of its services. In 1999, the Mercedes Benz tractors and the Czech Panav semi-trailer are new. At the same time, the increasing demand leads to the acquisition of 12-tonne pick-up and solo express cars. Another turning point occurs with the entry of the Czech Republic into the Schengen area and thus the abolition of customs supervision and the free movement of tradable goods. This year, the company also moves from its domestic dispatching workplace to an external one in the city of Ústí nad Orlicí, and in 2008 it employs its first dispatcher. At the same time, there is a gradual expansion of routes to the whole of Europe and the establishment of regular lines to Germany and Italy. Due to the need to guarantee the timely delivery of shipments, a tracking system is acquired for the exact localization of company vehicles.

In 2009, the KomarTrans company begins to specialize in the transport of chemical substances that fall under the ADR agreement. Since 2010, the company has also been operating other regular routes to Switzerland. Other activities of the company are devoted to the possibilities of ensuring storage. That is why it is acquiring the buildings of the former weaving factory Perla a.s., where space is built for the company's background, workshop space and, above all, the provision of surface storage services with a total volume of 2,000 pallet spaces.



Figure 2: Warehouse premises of the KomarTrans company, source: www.komartrans.cz

Further development of the company is then marked by the expansion of logistics warehouses with modern technology - that is, with hydraulic ramps and underpasses. Regular routes to Switzerland and Great Britain are being developed. In 2019, the company thus has 30 employees, of which there are 20 drivers operating 20 trucks and 5 people procuring a warehouse with a volume of 4,000 pallet spaces and a workshop. The rest of the team is in charge of planning and ensuring logistics operations and the running of the entire company.

Statistical data of KomarTrans, s.r.o.

To complete the overview of the KomarTrans company, data on economic development between 2015 and 2019 can also be given. They clearly show a positive development.

Balance of the company

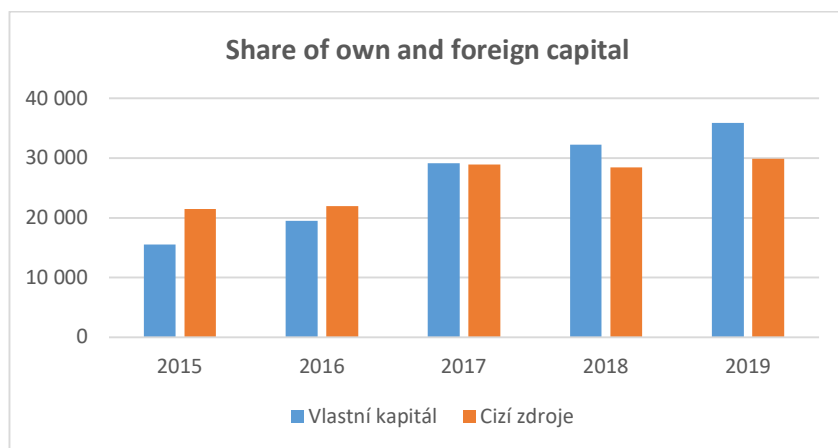
The first table shows data from the balance sheet - the balance sheet amount increased from CZK 36.979 million to CZK 66.166 million in the mentioned period, i.e. by 78%. Both asset items contributed similarly to this trend – while fixed assets increased by 85%, current assets by 78%.

In the mentioned period, there was also an increase in equity, by 131%. Foreign capital grew at a significantly lower rate, between 2015 and 2019 it grew by 39%. This had a positive impact on the company's indebtedness indicator (i.e. the percentage share of external sources from total assets), which reached 58% in 2015 and only 45% in 2019.

BALANCE SHEET (always as of 31.12.,
in thousands of CZK)

	2015	2016	2017	2018	2019
Fixed assets	23 546	25 076	34 010	38 785	41 496
of which: tangible fixed assets			34 010	38 627	40 070
land and buildings				21 381	21 686
grounds				994	994
movable things				17 204	19 337
long-term intangible assets				158	426
Current assets	13 124	16 142	23 870	21 982	24 387
Accrual of assets	309	305	390	415	283
Total assets	36 979	41 523	58 270	61 182	66 166

Equity	15 517	19 518	29 177	32 252	35 927
Foreign sources	21 462	21 987	28 901	28 444	29 897
Accruals		18	192	486	342
Total liabilities	36 979	41 523	58 270	61 182	66 166



Profit

Indicators from the company's income statement are also interesting. According to her, KomárTrans's turnover increased by 42% and profit after tax by 39% in the last five years. EBITDA, i.e. earnings before taxes, interest and depreciation, increased by 86% over the same period.

Economic indicators (in thousands of CZK)

	2015	2016	2017	2018	2019
Total turnover	62 327	67 171	84 904	82 223	88 505
Operating profit	4 795	5 458	12 536	5 438	6 878
Depreciation of assets	2 975	4 305	5 722	7 490	7 588
EBITDA	7 770	9 763	18 258	12 928	14 466
Profit after tax	3 497	4 002	9 658	3 683	4 875
Profitability of net profit	5,60%	6,00%	11,40%	4,50%	5,50%

Profitability of the business

The development of the KomárTrans company can also be indicated on the financial indicators, where:

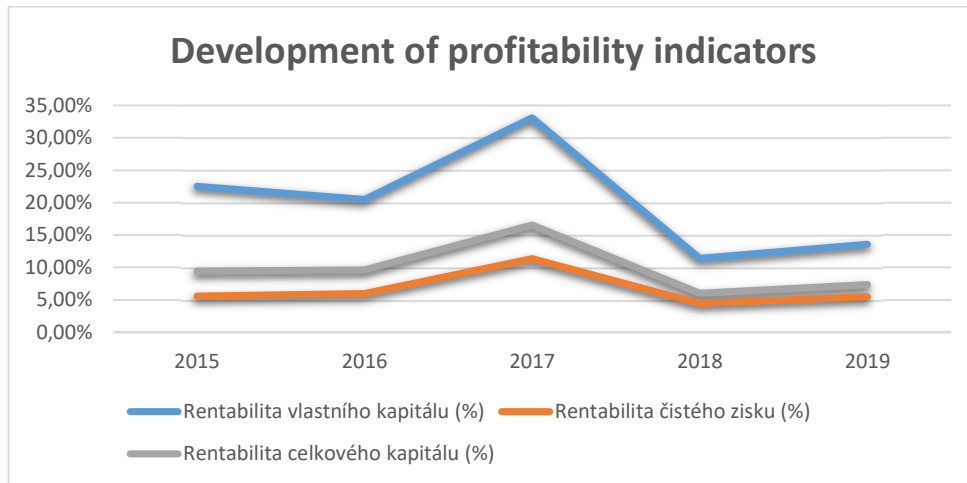
"Return on equity=" "profit after tax" /"equity"

"Profitability of net profit=" "profit after tax" / (total turnover)

"Return on equity=" "profit after tax" /"total equity"

Profitability indicators (in thousands of CZK)

	2015	2016	2017	2018	2019
Return on equity (%)	22,54%	20,50%	33,10%	11,42%	13,57%
Return on net profit (%)	5,61%	5,96%	11,38%	4,48%	5,51%
Return on Total Capital (%)	9,46%	9,64%	16,57%	6,02%	7,37%



Access to opportunities

The approach to contingencies is based on the company's defined strategy, as stated by its CEO, Mr. Komárek:

"The company's strategy is quite simple. To specialize in specific transport issues of the local market and not to be the "ordinary" carrier that needs many intermediaries to sell the service as a whole. Furthermore, the development of the company and the automation of processes thanks to today's technologies, which are already available. Searching for new opportunities in the field of transport and storage."

The company continuously and long-term deals with the competition and analyses it. As the executive states, the competition must be analysed and monitored, especially when there is relevant data available that can be used.

"If I compare competing companies of the same size in the area, it can be said that over the years we have matched the competition, or surpassed it in some logistics operations. However, I still see room for improvement."

"Every year, I obtain data from roughly the same size competing companies as well as many times larger competitors from publicly available databases and compare them with data from my own annual audit. I mainly focus on information regarding financial indicators, the number of employees, the fleet, its age, accompanying services, etc. Finally, based on this information, I analyse the strengths and weaknesses of our company, opportunities and threats, and accordingly I consider the possibilities in which direction it is necessary to move on."

Innovation in the company is significantly related to the optimal combination of inputs that can achieve the desired or expected results. Economic theory expresses these effects through the production function in the long run in the form of isoquants. An isoquant is a curve capturing such combinations of inputs K and L in which the volume of production is the same (in the same way as indifference curves show such combinations of quantities of two goods, the purchase of which has the same benefit to the user). This is a concave and decreasing function. In the case of introducing innovations into production, the curve moves away from the origin of the axes.

Economy further solves the optimal combination of inputs of variables K and L, which is based on the budget constraint, this is represented by the so-called isocosts, i.e. a straight line that always captures such combinations of capital and labour that can be purchased for the total costs available to the company. TC costs are influenced by the cost of capital, which is determined by the interest rate, and the cost of labour, i.e. wages. The total cost function will be:

$$TC = m \cdot L + i \cdot K \quad (2)$$

m ... wage rate per unit of work

i ... interest rate

The optimal combination of inputs then occurs at the point where the isocost touches the isoquant, mathematically, where the isoquant and isocost guidelines are equal. If the company wants to increase production, i.e. move to a higher isoquant, it must incur higher total costs. It is graphically depicted in Figure 1. It is true that:

$$Q_3 > Q_2 > Q_1 \quad (3)$$

$$TC_2 > TC_1 \quad (4)$$

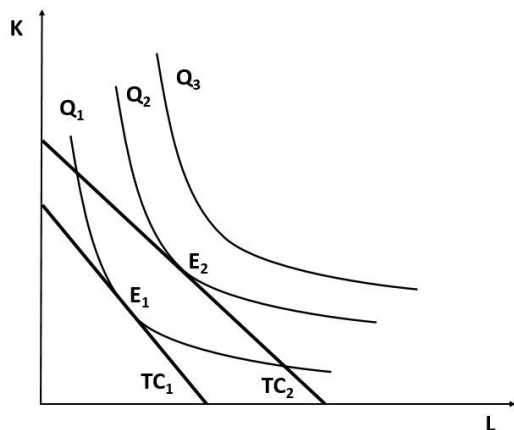


Figure 1: Optimal combination of inputs K and L of the production function Q [2]

A company can use new technologies at the expense of labour (often it may not be completely clear-cut, robotization also requires labour, moreover, a much more qualified one) for several reasons:

- lack of human labour, • replacing the unreliable human factor with machinery (including robotization),
- the need to reduce specific production costs, • increase in productivity

To increase productivity, it is necessary to achieve increasing returns to scale. This essentially means that the percentage increase in costs will be lower than the percentage increase in production, as shown in Figure 2a and 2b. Figure 2a captures increasing returns to scale – the spacing between individual isoquants decreases. On the contrary, in Figure 2b there are diminishing returns to scale the increase in production is always lower than the increase in costs.

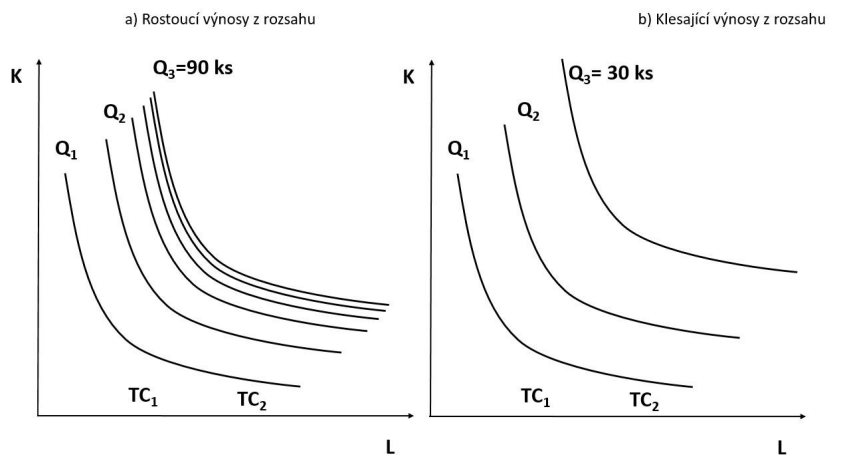


Figure 2: Optimal combination of inputs K and L of the production function Q [2]

Introducing new products

The company realizes that it too must innovate to be competitive. Despite the fact that the field of truck transport responds more to current market requirements, the company itself has recently introduced a significant change, namely the CARGY application. As stated by the company manager himself, Mr. Komárek:

"I see involvement in the project Development of a unique mobile application for administration and modern traffic management - the Cargy system - as a fundamental innovation. This innovation was mainly influenced by the effort to make the work of dispatchers, drivers and basically the entire hierarchy of the company easier. Commonly available software already showed a number of shortcomings that we were not satisfied with, and this was the impetus for creating something new..."

As part of the case study, it is precisely this software-type innovation whose primary goal is complete order processing and fleet management. Just the software processing enables fast management of the processes related to the planning and clearance of the shipment, both the process itself and the individual steps on an ongoing basis. Electronic records of all steps and content of individual orders enable sophisticated data mining in the field of process management, saving time and costs.

CARGY is a simple web and mobile application for managing modern car freight transport.

The application allows:

- the transmission of information in the dispatcher-driver-accountant triangle works automatically or with the help of one click
- dispatchers, drivers and mechanics are notified of changes in their agenda, so they don't have to regularly check what's going on
- you enter each piece of information into the system once, then it is automatically loaded into the system
- repeated orders can be created with one click, the Cargy system remembers them for next time
- easy configuration of processes to exactly match your needs
- easy cooperation of people who are not sitting together in the same room (very beneficial in the time of covid)

The main benefits are:

Easy to use:

When working with the system, we focus on the maximum use of automatic processes. Easy entry of information that is really important for the realization of the transport. Do not routinely describe the same data over and over again.

Inexpensive maintenance-free operation:

You don't need any initial investment to buy the software or an expensive IT specialist to install and maintain it. You only pay a monthly fee to use our service, everything else, from operation to updates, is taken care of for you.

Instant transfer of information:

Give directions to drivers with one click. Drivers can easily confirm that everything went well, or obtain documentation with one touch. Invoice automatically and immediately after unloading the order.

The aim of the CARGY application is to:

a) complete processing of the order:

- scheduling a vehicle order using a simple drag and drop on the scheduling dispatch sheet
- resale of the order or its part to the contracted carrier and automatic generation of the order with its dispatch
- present parameters for specific customers (price, currency, duty, loading, unloading, maturity, etc.)
- handing over documents to the driver with one click – the driver has complete information about the order, what, where, when with the option of displaying it in Google maps, mobile navigation with one click
- the driver confirms the implementation, or shares photo documentation from the realization with one touch on the mobile phone
- the order can then go to automatic invoicing in the accounting system
- fulfilment of the legal registration of transports (1 year, ISO 5 years)

b) fleet management:

- reporting defects and accidents with easy transfer of photo documentation
- automatic notification of the mechanic about the defect and transfer of information
- troubleshooting by a mechanic
- vehicle movement monitoring
- Information about the entire vehicle fleet, drivers and jobs in one place, also available from a mobile phone
- Vehicle planning calendar configurable and visible to all participating dispatchers, transport managers, warehouse, etc. (vehicle services, doctor's visits, training, etc.).
- the system can be expanded with additional dispatch sheets according to requirements

c) sophisticated data analysis:

- advanced reports needed for the strategic management of the company, both predefined and custom-made
- looking into the history of who, what, when, from where, where and for how much
- you can easily find prices for previous transports to specific places or specific customers

d) low input costs:

- no initial installation costs
- no hardware or software maintenance costs (updates are automatic)
- free mobile app on Google Play
- payment only for the number of cars used in a given month (pay-as-you-go) = if you don't drive (failure of orders), you don't pay (no fix)

Other advantages of CARGY are:

Development

- we are still working on a solution
- the application is developed according to new requirements and an ever-changing world
- the individual requirements of specific customers are also addressed

Simple installation

- no need for installation at the customer = everything is operated as a service
- the operation of the program can also be used from home - one license, many users

Maintenance-free operation

- automatically the latest software
- easy update of the mobile application for drivers via Google Play

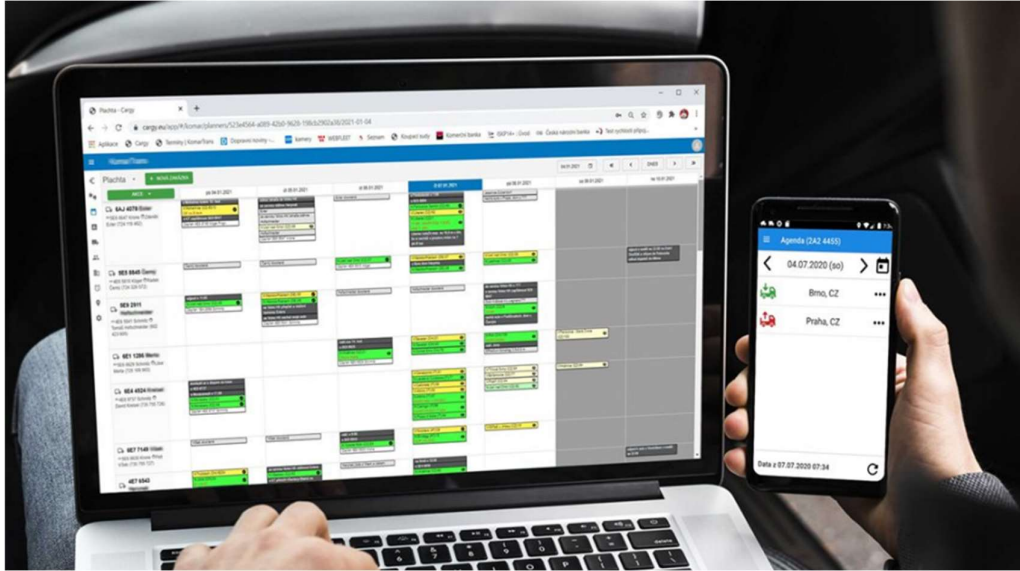


Figure 2.3: Illustrative photo, source: www.komartrans.cz

The company's CEO, Mr. Komárek, also summarizes the advantages and benefits of the application in his statement:

"One of the goals of the application was to save time and worry for dispatchers, who spent a considerable amount of time after work on the traffic agenda. Sending loading and unloading addresses to drivers, other accompanying information, creation and processing of orders, etc. They now go home on time and are able to take on a third more orders. This is basically a saving of at least a few manpower. Drivers love being able to track real-time scheduling of shipments, where unloading and loading are ordered chronologically along with navigation to the destination. They can also look back historically at where and when they were. Reporting defects and services has become a piece of cake for them even in logistics operations, when the driver does not always have the same semi-trailer, or vehicle, etc. From a managerial point of view, Cargy can alert you to the fall/rise of a certain market or customer, which is good to know before it affects financial, economic indicators of the company, etc."

Introducing innovative products

At the same time, the introduction of the CARGY system led to other necessary steps for the company, namely sharing with others, as it was a major investment and the application "outgrew" the company's needs and capabilities. As the company's executive states:

"We were only pioneers of the framework of the system, which was first developed at the request of dispatchers for the management and overview of transport orders. The needs of other activities connected with the operation of transport were gradually added to this framework. Today, the entire company accesses the system and it has become an indispensable helper for drivers, mechanics, and company management. At some point we were forced to hand over the product to Cargy, which is now developing it more intensively in cooperation with other carriers and their needs. The advantage

Research Case Study: KomarTrans

is that basically every carrier can get involved in the development and their ideas are implemented in the program. The program then rises on user value, not price.

“Development is essentially the most expensive part of the investment, which is now primarily funded by Cargy. Using the Cargy system works as a service, you can start using it almost immediately without any investment. If I forget that the transport company/dispatcher already has a computer and the driver a mobile phone with the Android system. The operation of the system is paid monthly as a fee related to the number of operated vehicles that are active in a given month. It’s fair. However, in order to achieve the maximum possible automation, it is necessary to integrate the Cargy system, for example, with an accounting system for automatic invoicing, or some other customized adjustments. He offers this possibility of bridging Cargo as a side activity and it ranges in the order of thousands of crowns.”

In terms of the introduction of new services that the company could focus on, the company is more inclined to self-improvement (sub-innovations, especially of a technological nature) than to other types of innovation, which is again related to the field in which it operates. As stated by the executive, Mr. Komárek:

“We try to take advantage of the opportunities (e.g. regarding new orders), but only to the extent that the regular shipments of our long-term customers and business partners, with whom we have had above-standard relations over the years, are not threatened.”

At the same time, the company mainly tries to work with business risks and to use innovative activities as part of their elimination.

“We experience the risks creeping in, and sudden at the same time. We usually follow the rule of risk diversification, when it is appropriate to think in such a way that the company is not, for example, dependent on one customer or supplier. In one market or say product. Spreading risk across different assets and sectors is based on the idea that if one area experiences turbulence, others should balance it out. It is the exact opposite of betting everything on one card. For this, we try to prevent risks. Regular training and well-informed employees have proven to be a reliable tool.”

The company can be considered flexible and adaptable in terms of its business and access to opportunities. As the executive states:

“If we want to continue to develop, it is sometimes necessary to respond flexibly to the changes that have occurred, to move forward. Of course, everything is limited in some way, but then it is important to skilfully move around the entire “playing field”.

Operating on international markets

The company has been operating on the international market for a long time, while trying to apply an individual approach to its business partners. As stated by its manager, Mr. Komárek:

“We carry out regular transport almost all over Europe, with regular routes including Germany, Italy, Switzerland, Great Britain, etc. Exporters send us from the Czech Republic to Europe, and it is important for us to return, that is, our operations must be abroad at the same time, to be able to get our fleet home, drivers to their families, etc. The form of cooperation is developed according to

the agreed transport contracts of a long-term and at the same time short-term nature, when we must always fill up all vehicle units to the maximum, so that we do not arrive, as they say, empty.'

"We value our business partners and take an individual approach to them. We try to accommodate them as much as possible. So, they represent an opportunity for us. A satisfied partner equals a referral. A referral equals a potential customer, partner..."

Impact of covid-19

Covid-19 is and was in the past year a very important topic that affected us carriers across the various regulations of all European states, where the "company's fleet" goes every week. According to the company manager, the effects of Covid can be perceived both negatively and positively, as he further states:

"...Definitely negative in relation to the impact on our lives and further the regulation that affected us all. Starting with testing, which represents an administrative, time and financial burden. On the other hand, the increased number of orders, more demand for transport, which only appeared with the "second wave", can be perceived positively. "

On the other hand, it was the Cargy application that made it possible to limit the risks arising in connection with Covid and enabled many employees to work from home or limit personal contact. At the same time, this extreme situation in the market and in the scope of restrictions has led the company to a more intensive intuitive approach to business, which it now considers an equal and complementary alternative to planning and a systematic approach.

"To tell you the truth, business is a combination of all the mentioned approaches, it just depends on the circumstances, when and to what extent you use which of them. I don't mean to say that it is absolutely correct, but it is my personal approach. "

Notes and sources used

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