

Amsterdam University  
of Applied Sciences

Optimizing Supply Chain Through the  
Implementation of BI: The case of Agna  
Group

Gjovan Shpati

Student Number: 500789226

Supervisor: Einholz, D. (Duco)

Assessor: Janssen, R.J.W. (Ronald)

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A thesis written by Gjovan Shpati

500789226

**Amsterdam University of Applied Sciences**

International Business Management and Studies (Fast Track)

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2

**Executive Summary**

The thesis has been written for the bachelor studies of International Business at the Amsterdam University of Applied science. The research has been conducted for Agna s.a, an Albanian based company that functions over several countries and specialize in bottling and distributing PepsiCo products in its region.

The paper focuses on the ways the company can leverage data to increase the efficiency of its operations through the implementation of a full Business Intelligence system, with functional data collection, processing and visualisation. Agna has identified the issue of *inventory waste*, as defined by its internal metrics, as one of its main efficiency optimization targets across its countries of operation. The company would use the BI system to bridge the gap of *information asymmetry,* when dealing with flow and storage of goods.

A number of options are identified for Agna on both the products and potential routes it can take for the implementation of a wide range BI system, considering both pricing, flexibility and strategic goals of the company.

To analyse the problem and understand the problem, the main research question of the thesis has been posed as follows:

**How can Agna s.a leverage data collection and processing to optimize its supply chain operations by implementing a BI system?**

To answer the question, three sub questions were put in place based on the three theoretical frameworks, including Supply chain risk management, Analytical hierarchy process, and Multi-layer framework business intelligence. The research has been based on primary data in the form of managerial information, qualitative observations based on interviews, and secondary data in the form of financial information.

Agna main flaws when it comes to operational efficiency, in essence stem from the following:

1. Inefficient organizational communication;
2. Inefficient data logging for the production of reliable information and forecast;
3. Lack of an automatic method of merging financial data in the same denominational formula;
4. Lack of live panel data on operations to leverage decision-making;
5. Unnecessary staff and departments.

Derivatively, Agna needs to have its own ERP system within the company to organize its purchasing and production orders, allow direct communication, limit inventory waste, and end the periodical material purchasing. Such software can be SAP or Oracle ERP, along with a visualization software like Tableu or PowerBI. This combination of these two types software will provide a solution for:

1. Data generation and Information symmetry – by providing a platform which creates data recursively and automatically as actions happen;
2. Accounting Automatization – data is converted from all territories and operations automatically and condensed in one version for further calculations;
3. Data visualisation – to provide pregenerated reports, that update live, to enhance the decision making processes.
4. Increase channels of non-verbal and organic communication among the entities.

Lasty, Agna, for acquiring and implementing a full BI system, would be better off following a flexible strategy rather than a cost-based strategy, due to the support provided for the proper implementation by companies like SAP, which would allow for a system that generates high quality data.

Contents

[Executive Summary 3](#_Toc44292597)

[1. Introduction 6](#_Toc44292598)

[1.1. Background of research 6](#_Toc44292599)

[1.2. Company background 6](#_Toc44292600)

[1.3. Opportunity analysis: 10](#_Toc44292601)

[1.4. Main research question (MRQ) 12](#_Toc44292606)

[1.5. Organization of the report 13](#_Toc44292607)

[2. Theoretical Framework 13](#_Toc44292608)

[2.1. Introduction: 13](#_Toc44292613)

[2.2. Applicable theories: 13](#_Toc44292614)

[2.1.1. Supply chain risk management - SCRM 14](#_Toc44292615)

[2.1.2. Multi-layer framework for business intelligence 15](#_Toc44292616)

[2.1.3. Analytic hierarchy process (AHP) 16](#_Toc44292617)

[2.2. Selection and Justification of the Theory to be applied: 17](#_Toc44292618)

[2.3. Sub-Questions: 18](#_Toc44292619)

[3. Methodology 18](#_Toc44292620)

[3.1. Introduction 18](#_Toc44292621)

[3.2. Supply chain risk management – SCRM 18](#_Toc44292622)

[3.3. Multi-layer framework for business intelligence 19](#_Toc44292623)

[3.4. Analytic hierarchy process (AHP) 20](#_Toc44292624)

[4. Supply Chain Risk Management (SCRM) 20](#_Toc44292625)

[4.1. Introduction 21](#_Toc44292626)

[4.2. Data presentation 21](#_Toc44292627)

[4.2.1. Material planning: 22](#_Toc44292628)

[4.2.2. Warehouse and fulfil1ment 22](#_Toc44292629)

[4.2.3. Bottling & Distribution 22](#_Toc44292630)

[4.3. Data analysis: 23](#_Toc44292631)

[4.4. Conclusion 23](#_Toc44292632)

[5. Multi-layer framework for business intelligence 23](#_Toc44292633)

[5.1. Introduction 24](#_Toc44292634)

[5.2. The Data Layer 24](#_Toc44292635)

[5.3. The Logic Layer 25](#_Toc44292636)

[5.4. The Access Layer 25](#_Toc44292637)

[5.5. Conclusion 25](#_Toc44292638)

[6. Analytic hierarchy process (AHP) 26](#_Toc44292639)

[6.1. Possible scenarios: 26](#_Toc44292640)

[6.2. Conclusion 27](#_Toc44292641)

[7. Conclusions 28](#_Toc44292642)

[8. Recommendations 29](#_Toc44292643)

[8.1. Introduction 29](#_Toc44292644)

[8.2. Implementation plan 29](#_Toc44292645)

[Step 1: Purchase a software 30](#_Toc44292646)

[Step 2: Organizational change 30](#_Toc44292647)

[Step 3: changing the supply chain 30](#_Toc44292648)

[8.3. Cost-benefit analysis 30](#_Toc44292649)

[8.4. Limitations of the research: 32](#_Toc44292650)

[8.4.1. Improvements for current research 32](#_Toc44292651)

[8.4.2. Additional future research 33](#_Toc44292652)

[References: 33](#_Toc44292653)

Appendix…………………………………………………………………………………………………………………………….48

1. Introduction
   1. Background of research

The research objective of this thesis is to deconstruct the concepts of Business Intelligence (BI) and Data Analytics (DA) and understand them in the framework of international businesses by using Agna Group, an Albanian based company as a case study. Therefore, the purpose of the thesis will be to understand the process of prioritization in applying business intelligence and data analytics in an international environment. To do that the concepts of BI and DA will be explored, the role they play in developing a business, their importance in today’s local, national, and international business environments. This research will examine Agna sea’s supply chain and its potential bottlenecks.

Data regarding the financial flows was extracted from Agna’s financial declarations to the Albanian Center for Business; the financial reports have been analysed in aggregate, meaning that all the inflows and out flows, including inefficiencies are calculated for all the companies comprising Agna Group. This is done due to the structure of the group, whereas the main entity controls all actions of all related entities, and finally amasses most profits onto the main entity. This ultimately means that Agna strives for an efficient and effective way to transfer goods within the Balkan countries, especially in the ones neighbouring Albania.

Managers at Agna understand that three things have become a necessity, which were unforeseeable until recently for a company operating in countries which had little technological integration; these being Optimizing their business structure by creating concise financial and operational channels, generating and collecting a large amount of data, and finally processing this data efficiently so that enhances decision making as well identifies bottlenecks in the business (Kohavi, Rothleder, & Simoudis, 2002).

Additionally, by analysing the tangible and potential impediments to the technological upscaling process we identify ways which the social, technical and organizational problems can be mediated. These problems arise not only from the gathering and processing of data, but also relate to the way people from different backgrounds working for different sub-entities of Agna, can adapt to change and work in harmony within the ecosystem.

* 1. Company background

The focus of this research will be the Agna group, an Albanian/Greek company that functions in the Balkans. Agna group specializes in beverage production, import, and export of food products and marketing. The company was founded in Albania in 1992 as Alfa S.A, and was the official distributor of Amstel and Pepsi Co. Alfa built its first modern factory in an Albanian village of Gline and started producing its beverages, it later became the official bottler and distributor for Pepsi on the territory of Albania. It later entered the advertising sector in 2001 by purchasing Albartex LLC, owning 65% of the market share, and later established On Time Concept, a marketing company specialized in events, market studies, and media relations, mainly used to self-operated in Albania without the need for 3rd parties. They later entered the real estate market, and merged its sub-company, Agna Investitor, with Anonime Kakavi S.A. They used this merger to further penetrate the international market, by consolidating the economic profile of Albania, easing foreign investments into the country. The company does not include BI or DA in its daily operations as they heavily depend on the classic methods of processing data information, (e.i. Excel sheets, manual input, data operators), and it employs more than 2500 people. Being one of the first companies established in Albania after the fall of the communist dictatorship. Since then, the company has managed to grow to a multi-million dollars organization and was able to win various international awards, such as the “22nd European award for Quality” awarded by the Editorial Office and the Trade Leaders Club in Spain, and was able to implement its quality standards in business development in more than 122 countries worldwide. (Superbrands)

Agna Group operates in multiple markets in the Balkans region, including Albania, Kosovo, Serbia, Montenegro, and Greece. The large scale of its operations, and the fact that the region is currently just developing its data structures, create an especially delicate situation for Agna in implementing these systems. Nonetheless, their implementation would provide tremendous benefits to Agna’s management dynamic. Furthermore, in 2019 Agna Group made revenues of 0.93% of the total Albanian gross domestic product and was ranked number 14 on the list of the top 200 largest businesses in Albania. (Agna Group - States where we operate).

Agna Group operates in what is considered a conservative method of management where most power is held by the cofounders\*\*. They are the main decision-makers for all the sub-companies, while each smaller department in each company has its head of department. Figure 1.1 explains that further.

*Figure 1.1*

Furthermore, the implementation of DA & BI systems in a company’s ecosystem is an internationally relevant topic that requires the tight cooperation of local entities, the providers of the systems, and the data centers, all operations being conducted in a free and cross-border fashion.

The research uses data from all the operation regions of Agna to compare where the implementation of BI systems was smoother, and then analyse both quantitative information and the qualitative data to provide a layout of a successful pipeline of BI implementation. Parallels can be drawn between the organizational culture differences between these countries within the same Organization, and the speed and efficiency of implementing technological systems (Dedic & Stanier, 2016).

Furthermore, graph 1.2 provides the company’s income from operating activities.

It shows that in 2016, the Agna group total revenue from operating activities was 110,501,494 USD, operational expenses of 102,747,325 USD, a total profit of 7,754,169 USD. In 2017, Agna Group's total revenue from operating activities was 121,751,896 USD, operational expenses 112,792,223 USD, a total profit of 8,959,673. USD. Lastly, in 2018, Agna Group declared a total revenue from operating activities of 125,354,448 USD operational expenses 112,792,223.21 USD, a total 9,589,015 USD. (Audit report of Agna S.A, 2019).

*figure 1.2*

By Agna’s own definition *inventory waste*, can be defined as the amount of inventory not allocated efficiently, either due to unreliable predictions, or due to unforeseen market behaviour. This means, that this part of their inventory is:

1. either returned by its sub entities for all regions, if not sold by a certain date, and by company policy destroyed; or,
2. is misallocated and is not delivered within the required timeframe to the ordering sub entity, and left in storage, while new product moves – leaving it in administrative limbo. \*\*

Agna calculates this metric as following: A+B=IW \*\*

Agna also internally measures the progression of this metric, by expressing it as a percentage of the total profit as a Key Performance Indicator.

This has become an obstacle in the way of the profit expansion, as recent trends \*\* have shown that the increase in inventory waste has risen faster in percentage points than expected, making up a larger *amount comparatively to the operating profit.*

The trends are evident, when taking into account that for the years 2016, 2017, and 2018, there has been a total *product waste* of *310,571* USD, *420,736* USD, *525,311* USD accordingly.

This an increase of 35% from 2016 to 2017, and 25% from 2017 to 2018. Furthermore, looking deeper into these numbers using Agna’s own KPI metric, compared to its operating profit in 2016 the company’s inventory waste was equal to 2.9% of the profit, jumping to 4.7% in 2017, and 5.5% in 2018.

These metrics show that there’s a growing issue with the inventory waste that accompanied the company’s big jump in profit between 2016 and 2017, and is still growing in 2017-2018, noting that 2018 is the latest audit report given by the company.

It also has to be noted that these inefficiencies are not fiscal in nature, mostly due to the low taxation levels present in all countries in the region, and the relatively free flow of goods between them (Agna, 2020).

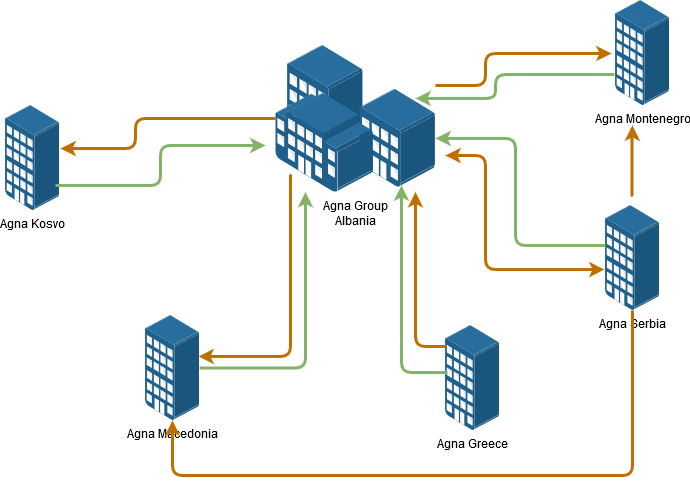
Agna’s supply chain can be represented as in the pic. 1, where the orange arrows represent a flow of goods, and the green arrow represents a flow of cash. The supply chain comprises the following main activities:

Fig.1.3

1. Agna Kosovo receives Goods from Agna Group (Albania). Profits from sales in the local market are sent back to Albania.
2. Agna Macedonia receives goods from Agna Group and Agna Serbia. Profits incurred in the territory are funnelled back to the main entity in Albania.
3. Agna Serbia receives, and sends goods to Agna Group Albania, arbitraging on prices for different base materials. Any profits generated can sent back to Agna group.
4. Agna Greece sends goods to Agna Group. Any profits generated from such sales, within the laws governing transfer pricing practices, are sent back to the main entity in Albania.
5. Agna Montenegro receives goods from both Agna Group, and from Agna Serbia. Profits are sent back to Agna Group.

Table 1, Table 2 and Table 4 lay out the exact ratio of where the inventory waste is generated based on the operations in all the sub entities of Agna. For each sub entity the amount of A - actual market waste and B- inefficiency waste as per the definition above has been laid out (Audit report of Agna S.A, 2019).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table 1: FY 2016 | A | B | A+B=Inventory Waste | As a percentage of total waste of USD 310,571 |
| Agna Group Albania | $ 31,740 | $ 11,740 | $ 43,480 | 14% |
| Agna Serbia | $ 24,784 | $ 40,436 | $ 65,220 | 21% |
| Agna Greece | $ - | $ - | $ - | 0% |
| Agna Kosovo | $ 41,741 | $ 57,642 | $ 99,383 | 32% |
| Agna Macedonia | $ 31,958 | $ 33,262 | $ 65,220 | 21% |
| Agna Montenegro | $ 11,553 | $ 25,715 | $ 37,269 | 12% |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table 2: FY 2017 | A | B | A+B=Inventory Waste | As a percentage of total waste of USD 420,736 |
| Agna Group Albania | $ 28,694 | $ 17,587 | $ 46,281 | 11% |
| Agna Serbia | $ 24,992 | $ 88,607 | $ 113,599 | 27% |
| Agna Greece | $ - | $ - | $ - | 0% |
| Agna Kosovo | $ 51,498 | $ 99,967 | $ 151,465 | 36% |
| Agna Macedonia | $ 39,128 | $ 23,982 | $ 63,110 | 15% |
| Agna Montenegro | $ 20,826 | $ 25,455 | $ 46,281 | 11% |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table 3: FY 2018 | A | B | A+B=Inventory Waste | As a percentage of total waste of USD 525,311 |
| Agna Group Albania | $ 52,111 | $ 31,939 | $ 84,050 | 16% |
| Agna Serbia | $ 25,425 | $ 90,143 | $ 115,568 | 22% |
| Agna Greece | $ - | $ - | $ - | 0% |
| Agna Kosovo | $ 62,512 | $ 121,347 | $ 183,859 | 35% |
| Agna Macedonia | $ 48,854 | $ 29,943 | $ 78,797 | 15% |
| Agna Montenegro | $ 28,367 | $ 34,671 | $ 63,037 | 12% |

* 1. Opportunity analysis:

The figures provided in the tables 1, 2, and 3 only provide part of the story on Agna’s inefficiencies, as they are derived ex post, based on calculations and on physical inspection. Thus Agna, can essentially observe the phenomenon after it has happened, and has little insight on the underlying reasons and mechanisms which make these inefficiencies arise.

Specifically, Agna relies in an outdated local ERP solution, which only functions as a management tool for excel files, which is where all the calculations are made. This severely impacts the speed which Agna can transmit information through the decision making chain.

The generation of big data started has played a continuously bigger role in businesses functions, for this data to be understood and turned into results, the data needs to be collected, analysed, studied, and acted upon. Moreover, if such data is used correctly, enterprises will be able to have a very big competitive advantage over its market, develop at a fast pace, and leave less space for human errors. According to a survey done by Bloomberg Businessweek, around 97% of companies with revenues that exceed one hundred million USD were using some form of business analytics (Cahill, 2019).

In this sense, it is important to set a clear definition of the concept of Business Intelligence. This research will define BI as a compassed umbrella for all concepts of collection, analysis, and sharing of external and internal business information (Pirttimäki, 2007). Both internal and external factors will be considered, taking further results of trials of BI.

Specifically the opportunities and approaches studied in this paper can be aggregated as follows:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Problem | Opportunity | Proposed Solution |
| 1 | Lack of Quality Data | There is a *gap* between what goes on the company and what needs to be transferred as information to decision-makers. | Implement an ERP and BI system that collects, categorizes and visualizes the information. |
| 2 | Product Waste Bottleneck | There is a tangible amount of product that does not get appropriately allocated once it moves through the subsidiary firms located in the region. | By coordinating ERP modules among the countries, can both provide information to make timely decisions, while allowing key stakeholders to identify the process slowdowns. |
| 3 | Lack of Automation for simple processes | There’s a time gap in the data coming from different countries, and the way it aggregates into Albania. This gap frequently allows for the creation of inefficiencies. | Automating the conversion and coordination of this data and information, and its visual representation in an appropriate software package. |
| 4 | Lack of insight into the real nexus of the problem | By not having deep insights into the data of the operations, at least not in real time – a gap is created between the need for continuous improvement of the company and the ability for managers to understand the root-cause of problems, much less anticipate them. | By creating very granular, data in a large amount, the company can use it to deduce what operational and financial routes may be further optimized. |

Agna s.a being the biggest Agna group contributor will be the focus of our study. Agna s.a is the sub-company for the beverages and Pepsi products. Currently, Agna s.a depends on people to conduct most if supply chain operations, leaving many bottlenecks unsolved (Agna, 2020).

Bottlenecks in the supply chain can include various factors, this research mainly focuses on Agna s.a’s wasted inventory due to improper allocation, delays, and lack of proper forecasting and how can we resolve them through data analytics and business intelligence. Nonetheless, derivatively, the other opportunities will also be resolved, due to their interconnectedness (Agna, 2020).

From just the correction of inefficiencies associated with the Agna’s own metric as defined, by product that is not properly allocated within its sub entities, Agna would effectively save the equivalent of 3-7% of its operational profit per financial year – which in its own a great achievement in terms of securing Agna’s long term success.

1. 4. Main research question (MRQ)

Data, once it’s transformed to information and then knowledge, has become in many aspects a new commodity, apart financial capital and physical resources (Pirttimäki, 2007).

In the case of Agna, this means that the implementation of a data collection, manipulation, and further processing, can become a very valuable tool in reducing inefficiencies for the company. Implementation and maintenance costs of such business move would be easily off put by the general increase in productivity for the company. Nonetheless, by focusing on a problem, its’ managers explicitly were most concerned about – the use case can be then extrapolated for other processes as well (Koxhuku, 2020).   
*Once Agna starts generating data, many KPI’s can be implemented to monitor different levels of the activities the company engages in.*

The Companies of Agna group, and its sub entities in the Balkans, can effectively create bridge of information through data and analytics and implement it into mechanisms for evaluating performance, understanding customer behaviour and forecasting market trends (Hedgebeth 2007), all to facilitate transaction costs, which are the glue that holds value chains together.

Enough data interpreted correctly is what separates an unsuccessful business from an intelligent one (Davenport, 2006)which is capable of adequately adapting and tailoring its business strategy to the characteristics and demands of its customer base.   
What this does is allow organizational functions to be improved by using sophisticated quantitative techniques in the form of Business Intelligence (BI) and Data Analytics (DA).

Business Intelligence and Data Analytics are in their essence support tools of information technology that are designed to aid decision making in businesses based on logical trends, models, and patterns.

It allows organizations to utilize data gathered into their operational systems, convert it into useful information, e.g. identify inefficient business procedures and hidden patterns, find areas of strengths and weaknesses, discover new opportunities, etc. and afterward present it in a way to improve business decisions.

By implementing BI, the organization can learn from the data already gathered into their operational systems, turn that information into strategic knowledge and stay ahead of the competition within their industry sector (Ramakrishnan et al. 2012). This gives businesses a necessary competitive advantage in a fast-paced and dynamic world. As technology develops, the ways and opportunities have become more pervasive, costs of acquiring data have gone significantly down making it ubiquitous and easily accessible. Companies realize the potential of data but struggle to find ways to utilize it as an asset (Chaudhuri et al. 2011).

Currently, Agna Group uses data operators, which is a team of 6 employees that their main job is to enter the data provided to them to one unified ERP system. The data takes between 48 to 72 days to be put in the system, this workforce would be more beneficial in different departments rather than just data input.

This thesis is going to delve into some of these challenges, analyse them, and try to find possible solutions to limit inventory waste by implementing BI and DA systems.

This paper focuses on exploring the potential of Agna s.a to leverage these systems, as well as the main methods to be implemented into resolving possible operational bottlenecks in its Balkanic operation, specifically *inventory waste* as a strategy can further improve profit margins through answering the question:

**How can Agna s.a leverage data collection and processing to optimize its supply chain operations by implementing a BI system within the next financial year?**

The data used in this research is reliable because it has been extracted directly from the internal resources for decision making used by the company at this time. All financial data was used based on the declarations Agna has made to the Albanian Authorities.

The Survey were answered by the key individuals having knowledge on these processes, and the relevant decision makers within the company’s finance department, and some managers.

The interviews provided a high level overview of the main issues that the company is facing as of the current.

The data used in the research is valid, and has been audited, both internally by Agna, and externally for declaration purposes.

Due to its international operations and the guidance of the Albanian government, Agna, follows strict policies in sharing information. All data available and used in the research has been provided by Agna through official channels, and with best practice in mind.

* 1. Organization of the report

This report will start by identifying the main three theoretical frameworks that the research will use to understand the current case of Agna and the causes behind its inventory waste. Starting by explaining the 3 different theoretical frameworks used, the supply chain risk management SCRM, the multi-layer framework for business intelligence, and the analytical hierarchy process. Moving forward to extracting the data and the methods used to achieve this research, which is mainly a primary qualitative and quantitative approach to gather this information. This includes an interview with the CEO and an interview with the COO. Furthermore, the research will dive into each framework, starting by dissecting the supply chain, understanding the flaws in each stage in the supply chain, further identifying the needs of the company when it comes to a BI software, ending with two possible strategies for the company to achieve its goal of limiting the inventory waste. Chapters 7 and 8 lead to the conclusion and recommendation of the report, pointing out that the company should follow a flexible strategy that has proven the best option through limiting the inventory waste, optimizing the supply chain, and is beneficial according to the cost-benefit analysis conducted at the end of the research (Elbashir, Collier, & Sutton, 2011).

1. Theoretical Framework
3. 2. Introduction:

To answer the main research question and the following sub-questions of this thesis there needs to be formulated a theoretical framework based on scientific research. This chapter will build that framework to analyse and explore the different opportunities provided by implementing BI systems into international businesses such as the main case study of this report.

This chapter of the thesis will consist of four parts: To begin with, several theories will be introduced delving into the umbrella term of Business Analytics and the relationship between information, data, knowledge, and intelligence in connection to international businesses such as Agna Group. Secondly, a selection of relevant and pertinent theories will be made concerning this particular research and each theory’s corresponding advantage will be weighed out. Next, there will be a discussion on the limitations of the selected theories to measure the sustainability of the selected theoretical perspectives. Lastly, several sub-questions will be formed derived from the main research question and based on the chosen theoretical perspectives.

* 1. Applicable theories:

To provide a scientific base for this research, several theoretical perspectives are selected regarding the nature, importance, difficulties, and benefits of using Business Intelligence systems to improve competitive advantage. The following theoretical perspectives will be analysed:

* Supply chain risk management - SCRM
* Multi-layer framework for business intelligence
* Analytical Hierarchy Process - AHP
  + 1. Supply chain risk management - SCRM

Supply Chain Risk Management (SCRM) is one of the fastest-growing research areas in logistics. As its name points, SCRM helps find the risks in the supply chain, and assist in managing it. This works on an everyday basis and exceptional risks. Through the implementation of risk management process tools with the members of the supply chain, SCRM attempts to reduce the supply chain vulnerability through a holistic approach that identifies weak and failures points, or points of high risk within the supply chain itself (Manuj & Mentzer, 2008).

Supply chain management as an umbrella term is a business philosophy for managing information, materials, and monetary flows among numerous logistics levels such as suppliers, distributors, warehouses, transporters, and end-users. Many qualitative and quantitative factors go into SCM making it a complex and sophisticated tool for planning.

Furthermore, Wieland and Wallenburg (2012) found that SCRM is essential for a company’s agility and robustness as they both show improving performance. Agility creates customer value in the supply chain, and robustness creates a positive effect in the supply chain’s customer value and business performance, creating a low-risk value chain as a final product, eventually leading to a less risky distribution and retail chain, leading to less warehouse waste. This theory helps to identify, assess, and prioritize supply chain risks for the specific company. To extract key risk drivers in SCRM primary management processes will be reviewed in order to identify dysfunctional management processes pertinent to supply chain risks; once supply chain risks are identified, assessed and prioritized, risk mitigation strategies will be proposed; Supply chain risk mitigation strategies include cost, quality, delivery and flexibility perspectives. According to Manuj and Mentzer (2008), the supply chain is a 5-step process:

1. Risk Identification, through using multiple sources that clarify risks into supply, operations, demand, and security risks. It aims at generating a comprehensive list of risks and providing an understanding of the risk as to the basis for decision making for the following strategies. This can be carried out on several levels of details depending on the level of the risk, the purpose of analysis, and information are given.
2. Risk Assessment and evaluation, through taking the risks from the first step, studying them, and understanding the risk and its possible results.
3. Selection of an appropriate risk management strategy, various strategies can be applied, some are based on models such as the Analytical Hierarchy Process, and some are based on specific goals such as avoidance, postponement of risk, risk control, transferring or sharing risks.
4. Implementation of supply chain risk management strategy, referring to the strategy chosen in point III.
5. Mitigation of supply chain risks, simply, the last and pre-first step for the whole process, and it focuses on preparing for the upcoming unforeseen risk events.

There are various advantages for SCRM, such as:

* Gives a clear overview of the supply chain
* Quantifies risks in the supply chain
* Allows for different possible strategies to be implemented
* Increases robustness and agility
* Avoid unpredictable risks
* No accounting ambiguities
* Agna has the required skills and knowledge to research it and apply it

The disadvantages of the SCRM model can be summarized in:

* No particular strategy to follow
* Different models can be applied
* A continuous process
* More control of the supply chain might require a higher cost or bigger staff
* Requires an up-to-date ERP
* Perception-based
  + 1. Multi-layer framework for business intelligence

Collecting unstructured data for management support has been explored from several directions including case-based publications offering pragmatic solutions, ones focusing mainly on techniques for analysing document collections based on the extraction of structured data from unstructured content, and more. One of the approaches which aim to integrate structured and unstructured data for management support is the multi-level framework for business intelligence which can be used as a vendor-neutral conceptual reference for BI solutions. In other words, this particular model contributes towards the standardization and unbiased business practices in the field of BA by collecting data from a variety of sources to build a better competitive intelligence. This applies to the Agna case in the sense that the company frequently uses external information such as financial reports of competitors, patent databases, government and research publications, and more. This is all done in an integrative orientation to understand competitive intelligence as part of wider management support IT infrastructure which subsumes highly different systems.

The structure of this framework includes not only components to handle and analyse unstructured data but also a more holistic understanding of management support infrastructures. The presented framework can be used in the Agna case to structure BI initiatives within the company, which themselves are created to integrate unstructured data for competitive intelligence applications. This framework includes three layers: the data layer, the logic layer, and the access layer.

* + - 1. The Data Layer

This layer deals mainly with the storing of structured and unstructured data for management support purposes. Some of the currently existing data repositories include data warehouses, operational data stores, data marts, etc. On the other hand, unstructured content is handled with Content and Document Management Systems. The data which is collected is initially extracted from sources such as operational systems like ERP and SCM systems. Once the data is collected, but before it is analysed the data is transformed in several steps. (Kemper 2000). However, when applying this to the Agna Group case, it becomes evident that one of the main challenges during the data layer is the plethora of existing data which on its own creates multiple other issues. Companies such as Agna are not always financially or operationally prepared to handle the maintenance of data warehouses but instead can only have gotten as far as utilizing “core data warehouses” which contain all management support data. These core warehouses can only be applied for specific data serving a certain single business process. The shift towards bigger data warehouse infrastructure is something that a lot of organizations such as Agna Group are still struggling with.

* + - 1. The Logic Layer

This layer provides analytical functionality to analyse structured data or unstructured content. This includes processes such as data mining and OLAP, but also the ability to generate ad-hoc analysis, implement performance management concepts, generating interactive business reports, and more. Some of the tools coming from the knowledge management domain which are applied here include workflow support or tools for information retrieval.

This section of the research will focus on how the so-called "generic analytical systems” can enable accessing, combining, and analysing data for the Agna group with the organization having a build-in ex-ante condition of business logic, and as a method to analyse and generate knowledge from the aggregate information coming from all Agna entities.

* + - 1. The Access Layer

This layer is often made possible by some type of ‘portal software’ which is supposed to provide a harmonized Graphical User Interface (Priebe et al., 2003). And it allows the user to conveniently use all relevant functions of the logic layer within the confines of defined user roles and user rights.

This part of the thesis discusses the importance and conditions of utilizing such portals, concluding the Agna case. The company does not currently use any software portals or any architecture for this part of the approach. However, it can greatly benefit from one, since a main advantage of the approach is that it does not incur recurring costs.

* + 1. Analytic hierarchy process (AHP)

The analytic hierarchy process (AHP) is a structured technique that organizes and analyse decisions based on mathematics and psychology, it is particularly used in group decision making and can be found in different fields. AHP aims at generating a decision that fits the decision-makers' end goal and their problem by providing a comprehensive and rational framework (Chang, Ellinger & Blackhurst, 2015).

This tool can be used for risk decomposition and prioritization based on Agna’s case as AHP allows us to quantify the issue, creating a mathematical decision-making graph. It starts by building a hierarchy, where decision-makers evaluate the elements of the hierarchy through the usage of concrete data, comparing every two elements and their effects on the above elements, using the data and personal judgments, the decision-maker can come to move to the next element, and so on.

This method is can be done through simple mathematic equations that can be done by Excel, as currently done by Agna. However, many computer software is available for specific cases and companies (Chang, Ellinger & Blackhurst, 2015).

Furthermore, AHP’s hierarchy should involve an overall goal, different options and alternatives used to reach the goal, different components and constituents, and in some cases, alternative goals. Furthermore, the alternatives can be broken down to different criteria, and usually include diagrams and graphs to describe the hierarchies. Figure 2.2 gives a sample of an AHP hierarchy diagram.

*Figure 2.1*

Advantages of AHP include:

* Adaptivity to SCRM
* Quantifiable measures
* Takes mathematical and psychological into perspective
* Assist in complex decision making
* Cost-effective
* Can be done manually and through software

Disadvantages of AHP include:

* Even though numerical values are based on data, much of it is based on personal perception
* Time-consuming
* Alternative and priorities can differ between departments and might not work on an organizational level
* No set rules, open to personal use
* Once new alternatives are added, old alternatives cannot change as it will shift the whole hierarchal model.
  1. Selection and Justification of the Theory to be applied:

This research points out how Agna can improve all of the previously mentioned and even more if it switched to a modern BA and DA systems, build projections, and aimed at improving its business as a whole.

However, this does not come without disadvantages. Intelligence has been a part of different areas in life, for a while, and businesses have been collecting data for a long period. What is different nowadays is the amount of data available, thanks to the Internet of Things, fast pace globalization, fewer trade barriers, and technologies, the amount of data available every day is greater than the day before. Therefore, it is important to make use of this data, but what is more important is making use of the correct data. It is also important to note that our theory has limitations and it differs between different cultures and organizations, hence, the use of sociological literature to better understand the culture which applies to the current case. Through using the proposed theoretical framework and method, the company will be able to quantify this data, creating a possible list of solution that will assist Agna in removing some of its supply chain bottlenecks, specifically its inventory waste, as it puts priorities in order, deconstruct the issue, and allow the company to choose the correct software.

* 1. Sub-Questions:

In this sense, what companies struggle with can be broken down into **three** sub-issues that will be closely examined by using Agna Group., an Albanian company, as a case study and exploring the results and findings which come up within an international framework. The **three** main issues are:

1. What is the origin of the biggest risks in terms of the supply chain that the company faces?
2. What type of solution can Agna Implement to achieve its goals in terms of efficiency?
3. How can the cost and benefits Agna is set to face from the implementation of an efficiency system be measured through a use-case of a current bottleneck in terms of international efficiency?
4. Methodology
   1. Introduction

This chapter is dedicated to discussing the development of the framework established in Chapter 2. The research methods used are directly connected to the framework and founding academic theories. Hence, the theory-building and practical problem solving are both interconnected in our research, and focus is put on both of them simultaneously. Furthermore, business research is often divided between three separate approaches including quantitative and qualitative. Consequently, to provide answers to the research questions put forward in this research would consist of words and numbers almost equally and require a further explorative method. Therefore, this thesis uses a mixed approach.

* 1. Supply chain risk management – SCRM

To answer the first sub-question “What is the origin of the biggest risks in terms of the supply chain that the company faces?” we will have to apply the SCRM method. The data that needs to be collected and quantified is the following:

* The main risks the supply chain faces
* The expenses in the supply chain regarding the inventory
* The inventory management process

Due to the nature and characteristics of the global business environment such as demand fluctuations, supply disruption and delays, price changes, exchange-rate fluctuations, etc. supply chain risk management has become one of the core business competencies for companies such as Agna S.A. Developing certain business strategies to mitigate and effectively manage these risks in a pro-active way is an important step towards securing competitive advantage (Naci, 2020).

To do so, we will consider the main 4 supply chain risks, financial, operational, human resources, and informational risk aspects, leaving out the cyber risks as neither the company nor the Albanian government provides a reliable database to support the level of such risks. This data will be quantified in priority according to the CEO and the COO. Separating the 4 risks into a sum of 1, and relying on the average of their responses, according to best practices.

Financial data leading to the excess of inventory and the inventory waste have been harvested from the company’s internal financial database. This will allow the research to pinpoint the main issues that are leading to such financial losses, as per the dynamics of the model being applied.

Lastly, the whole supply chain process will be further understood through the interview with the COO to fully understand the supply chain process that leads to the inventory and how is the inventory managed and decided upon.

The data is collected from primary sources, using qualitative and quantitative research in its nature as most of the research and applicable work to our theory of choice is dependent on human intelligence and observations, and the company’s financial statements. The qualitative data includes a ranked survey sent out to key stakeholders to rate and provide information on how their current workflow is laid out. Quantitative data is comprised of financial data extracted from their internal financial database and the information provided in their audit documentation.

* 1. Multi-layer framework for business intelligence

To understand which BI software does Agna group need, it is required to fully understand the available data. Therefore, Multi-layer framework for business intelligence will be utilized because of its detailed, yet, inclusive framework, but also its ability to analyse and handle unstructured data and its holistic understanding of the management support infrastructures. To do so, data needs to be extracted from the company’s database. What is needed to conduct the multi-layer framework for business intelligence is:

* Data storing method;
* Data processing method;
* Data access method.

Through the Data Layer, the data sources will be identified, then, the best data sources will be chosen out and moved to the storing method. Choosing a storing method will also be essential to the Agna Group BI system, therefore, the researcher will identify the available option through secondary quantitative options and apply the best data warehouse.

The Logic Layer will provide us with the analytical functionality of the gathered data. This will allow Agna to understand the best method to mine this data through the supply chain operations from the data layer. Using the Logic Layer, an ad-hoc analysis will be conducted that will clarify the performance management concepts and generate the required business reports. These reports will be narrowed to the supply chain management to fit with the research.

The last layer is the Access Layer, which is the software that is used to visualize this data and turn it into reliable information that decision-makers can understand. The data harvested, processed, and analysed will be provided to each user depending on their roles in the supply chain, therefore, it is important to understand each department's task from Chapter 3.1.

Conclusions will be based on qualitative primary and secondary data based on the questionnaires, the financial information and the interviews conducted.

* 1. Analytic hierarchy process (AHP)

To answer the second sub-question, “What type of solution can Agna Implement to achieve its goals in terms of efficiency?”, the company needs to understand the origin of the issues it’s facing and generate a mitigation strategy. To apply the most appropriate strategy, the following information needs to be known:

* The chosen strategy
* The risk priority
* What risks need to be decomposed

To do so, we rely on information from the SCRM method, realizing which are the suitable strategies according to the company’s CEO. It is essential to decide between the four different possible strategies:

* Cost strategy
* Quality strategy
* Delivery strategy
* Flexibility strategy.

As the Quality strategy is not possible because the quality is decided by different factors including PepsiCo, the decision will depend on the other 3 strategies. Thus when considering a business Intelligence solution to optimize it’s operational flows, Agna has to consider all the above factors in both what solution to implement as well as the pace of implementation – all components of its strategic approach.

The data will be collected from the interviews with the CEO and COO, it will be primary qualitative and quantitative research.

Figure 3.1 visualises the research process.

*Figure 3.1*

1. Supply Chain Risk Management (SCRM)
   1. Introduction

In this line of thought in recent years Agna S.A has invested significantly (data?) in its management infrastructure with a specific focus on effective supply chain strategies. Some of the firm’s goals include providing an organization-wide understanding of supply chain concepts, policy re-doing, working on cross-function alignment within the organization, investing in more sophisticated IT systems and personnel, and more. Agna s.a’s target is to reduce its inventory waste by 30% by identifying and eliminating uncertainties, such as the ones mentioned above, in the company’s supply chain. In order to do that Agna’s strategy includes risk management of both inbound and outbound supply streams taking into account all supply chain functions. Some of those include potential effects of various supply chain risk factors in areas such as manufacturing and production, purchasing and procurement, outsourcing, warehousing, logistics, and more. This framework will help us answer the following sub-question:

***What are the company’s priorities and biggest risks in terms of the supply chain?***

The four steps to the process of risk management include identifying risks and where they stand in relation to the supply chain, quantifying them in order to determine what financial impact they could have on the company’s sales and profitability. Next, a response strategy is formed to address the disruption and return to normal operations as fast as possible. The final step is mitigating by laying out actual strategies and tactics designed to minimize the disruption to the business as a whole. We will need to understand the main risks, the expenses, and how is the inventory managed. This data will be collected through primary research and interviews with the CEO and COO.

* 1. Data presentation

According to the interviews with the CEO and COO (2020), Agna’s supply chain management are presented in the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Risk/Strategy | Cost strategy | Flexibility strategy | Delivery Strategy | Risk Relative Priority | Risk priority |
| Financial risk | 0.256 | 0.424 | 0.337 | 0.317 | 2 |
| Operational risk | 0.430 | 0.321 | 0.320 | 0.382 | 1 |
| Information risk | 0.042 | 0.106 | 0.220 | 0.251 | 3 |
| Human resources risk | 0.314 | 0.149 | 0.123 | 0.50 | 4 |
| Strategy criteria relative priority | 0.546 | 0.310 | 0.144 | 1.000 |
| Strategy rank | 1 | 2 | 3 |

*TABLE 4*

To understand the expenses of the supply chain, it has been broken down into 4 main activities shown in figure 4.5. Through the segmentation of the supply chain, risks will be easier to identify, and over expenses can be pointed out.

*Figure 4.1*

* + 1. Material planning:

Material planning is an essential part of supply chain management as it is the first step. Through this stage, the organization plans on the required material that it needs, its suppliers, warehousing, and forecast sales. This stage involves different teams, including sales, marketing, warehouse, and logistics. In the case of Agna, the whole material planning process is based on the sales forecast by the sales team and is based on a bi-annual purchasing of all raw materials (Trkman, McCormack, de Oliveira, & Ladeira, 2010).

The sales department decides on predicted selling with a margin of error of ±4% of total sales, criteria, and warehousing. This is filled up by the logistics department and later sent to the COO for the final signature. Once the COO signs the order, it is sent to the “input department” where the employees type it in the system within 24-48, to later upload it to the accounting system and send a copy to the purchasing department to place the orders. This process in total takes between 1-4 working days and involves various departments. (Koxhuku, 2020).

* + 1. Warehouse and fulfilment

Agna s.a rents 3 out of the 8 warehouses used to store its materials and production and owns 5 of them (Naci, 2020).

. The rent cost of the 3 warehouses is 117,500 USD annually, with the cost of 30,000 USD each, all rented from the same company. These 3 warehouses are located near Agna’s bottling factories, and stores 35% of the biannually ordered materials and managed by the logistics department. Table 2 shows the total expenses for each warehouse.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Warehouse 1 | Warehouse 2 | Warehouse 3 |
| Rent | 39,167USD | 39,167USD | 39,167USD |
| Operating expenses, including wages | 55,600USD | 63,309USD | 65,432USD |
| Total cost | 94,767USD | 102,476USD | 104,599USD |

*TABLE 4*

* + 1. Bottling & Distribution

Agna bottles its products in its own facility that includes different warehouses and productions in Albania and stores it in its own in-house facilities. Once a shipment of materials is received, the handling team writes a report of the quantity, passes it to the warehouse manager, who in his turn passes it to the head of the logistics department (Agna, 2020). After having the order signed, the logistics send it using in-office mail to the data input team, which in their turn uploads it to the ERP within 24-48 hours (Seethamraju, 2007). As for the orders, Agna receives orders through the sales department from its certified sellers within its operating countries, in its turn, the sales team sends an in-office mail to the bottling facility with an order to start production for the sold quantity, with the name of the client, quantity, specifications, and importance of production time. After the product is bottled, Agna contacts a shipping company to pick it up. Once the whole batch is bottled and shipped, the production team sends a report to the sales team, who in turn mail it to the input team to insert it in the ERP (Koxhuku, 2020).

* 1. Data analysis:

Referring to table 1, the management’s and organizational priorities for strategy and risk become more visible. A cost strategy that gives higher importance to the operational risk would be the organizational priority. However, a flexible strategy that gives special attention to the financial and operational risk also is of high probability to be a suitable decision according to the CEO and COO. Choosing a cost strategy would mean that the company will be looking for longer-term stability rather than direct results improvement (Naci, 2020). The flexibility strategy on the other hand would prove to be riskier, however, it would prove to a faster, reliable, and sustainable strategy. Having one strategy does not cancel the other, as Agna can follow a mixed strategy that focuses on cost reduction through flexibility improvement.

Furthermore, Agna s.a spends a large amount of money on renting warehouses, which include costs such as operating, staffing, depreciation, and rent. This is because the company follows a hefty and long process to input its data into the system and forecast its sales numbers, which in many cases, prove not to be very accurate. Agna has an obvious data input issue caused by the various factors, including lack of staff education, lack of appropriate ERP and CRM, hefty paper process and physical paper dependency, and the bureaucratic process and company hierarchy. It costs Agna an annual 301,842USD to sustain 35% of the inventory on a two annual purchasing period. This is caused by the inability of the company to forecast sales right and process orders fast. According to the COO, most of the inventory waste caused by damage happens in the off-site warehouses, causing around 40% of the total waste. (Koxhuku, 2020).

Moreover, the chaotic and lengthy ordering process leads to an excess or lack in orders/production batches due to the time it takes and the time until the different departments are able to retrieve the information from the assistants with the paper trail or the input department with the ERP. Most of the company’s work is reliant on internal mail and written information. There have been many occasions where such mistakes were unavoidable, and Agna had to deal with different orders errors. According to the COO, Agna receives orders equal to 20% of its waste because of human errors that can be avoided easily. (Koxhuku, 2020).

* 1. Conclusion

Agna s.a has an obvious problem with its supply chain management. It has proven to be outdated, lengthy, bureaucratic, over monitored, and rather costly. The managers have shown a great want for change and have shown interest in following different strategies to improve their supply chain and cut their waste and expenses. Agna’s losses are mainly caused by their staff, human errors, lack of education, lack of appropriate software, and lack of training programs for its staff. The possible scenarios for these problems will be studied using the AHP framework.

1. Multi-layer framework for business intelligence
   1. Introduction

One of the main challenges in utilizing business bits of intelligence is the abundance of data, its storage, and management. Collecting unstructured data for management support has been explored from several directions including case-based publications offering pragmatic solutions, ones focusing mainly on techniques for analysing document collections based on the extraction of structured data from unstructured content, and more. One of the approaches which aim to integrate structured and unstructured data for management support is the multi-level framework for business intelligence which can be used as a vendor-neutral conceptual reference for BI solutions. In other words, this model contributes towards the standardization and unbiased business practices in the field of BA by collecting data from a variety of sources to build a better competitive intelligence. This applies to the Agna Group’s case in the sense that the company frequently uses external information such as financial reports of competitors, patent databases, government and research publications, and more. This is all done in an integrative orientation to understand competitive intelligence as part of wider management support IT infrastructure which subsumes highly different systems. Part of Agna Group’s operational model includes opening new positions in the IT department and build necessary structures to manage the available data such as “data warehouses” and vendor portals.

This framework will be used to answer the second sub-question:

**How can the cost and benefits Agna is set to face from the implementation of an efficiency system be measured through a use-case of a current bottleneck in terms of international efficiency?**

The structure of this framework includes not only components to handle and analyze unstructured data but also a more holistic understanding of management support infrastructures. The presented framework can be used in the Agna s.a’s case to structure BI initiatives within the company, which themselves are created to integrate unstructured data for competitive intelligence applications. This framework includes three layers: the data layer, the logic layer, and the access layer.

* 1. The Data Layer

This layer deals mainly with the storing of structured and unstructured data for management support purposes. Some of the currently existing data repositories include data warehouses, operational data stores, data marts, etc. On the other hand, unstructured content is handled with Content and Document Management Systems. The data which is collected is initially extracted from sources such as operational systems like **ERP and SCM systems**. Once the data is collected, but before it is analysed the data is transformed in several steps. (Kemper 2000). First, the data is transferred into the company’s data warehouse by using “ETL” (used to extract, transform, load data) tools. However, when applying this to the Agna Group case, it becomes evident that one of the main challenges during the data layer is the plethora of existing data which on its own creates multiple other issues. “The transformation encompasses filtering out syntactical and semantic errors, harmonizing data from different sources, aggregating data, and enriching it by calculating additional business metrics.” (Kemper 2000). Companies such as Agna are not always financially or operationally prepared to handle the maintenance of data warehouses but instead can only have gotten as far as utilizing “core data warehouses” which contain all management support data. These core warehouses can only be applied for specific data serving a certain single business process. The shift towards bigger data warehouse infrastructure is something that a lot of organizations such as the Agna Group are still struggling with.

A lot of companies have implemented document and content management solutions in the form of tools for input, archival, indexing, versioning, and provisioning of electronic documents.[[1]](#endnote-1) The main benefit of these systems is that they allow companies to efficiently store, administer, and distribute administered content, which is facilitated by the fact that the system is designed in a way that it separates content, structure, and layout. Furthermore, content and document management systems can also be used as sources of structured (meta) data which can be very challenging for companies such as Agna. The extraction of metadata includes describing and clustering content, analyzing patent documents using text mining tools, generate metadata according to predefined dimensions, and finally classify accordingly. So far, this last step is far out of reach for Agna, since extracting semantic metadata requires text mining algorithms which the company is unable to implement for the moment. If Agna. considers the implementation of such tools, the main consideration for their use would be their cost/benefit ratio.

* 1. The Logic Layer

This layer provides analytical functionality to analyze structured data or unstructured content. This includes processes such as data mining and OLAP, but also the ability to generate ad-hoc analysis, implement performance management concepts, generating interactive business reports, and more. Some of the tools coming from the knowledge management domain which are applied here include workflow support or tools for information retrieval.

This section of the research will focus on how the so-called "**generic analytical systems**” can enable accessing, combining, and analyzing data for the Agna group with the organization having a build-in ex-ante condition of business logic. Some of the techniques for data analysis which these systems include are **OLAP systems** – they allow the navigation of data in a multidimensional way, query-based access – allow users to read from the data layer through languages such as SQL and MDX. Another type of system if the ‘model-based analytical’ one, which offers algorithms to uncover complex patterns and relations by performing complex analytical operations. Decision support systems and data mining are also models-based analytical systems (Xia & Gong, 2014). Reporting systems combine numbers, text, and graphics to present data.

These systems are in many ways complementary and a full understanding of firm-level, competitive advantage requires an understanding of all of them and more.

* 1. The Access Layer

This layer is often made possible by some type of ‘portal software’ which is supposed to provide a harmonized Graphical User Interface (Priebe et al., 2003). And it allows the user to conveniently use all relevant functions of the logic layer within the confines of defined user roles and user rights.

This part of the thesis discusses the importance and conditions of utilizing such portals, concluding the Agna case. Part of the company’s operational plan aimed to resolve the identified bottlenecks includes using consolidated user navigation, as a component of an independent software which has defined interfaces in order to allow communication. According to the COO, the main goal that Agna’s management is working on right now is **integrating all of its vendors into the portal** that it’s being currently used by the company (Koxhuku, 2020). This allows all stakeholders to have simultaneous and homogeneous access to structured, as well as unstructured data. One of the main benefits of this approach is that it only requires certain portal administration and maintenance which do not incur recurring costs or additional efforts on the end-user side.

* 1. Conclusion

Agna needs to be able to integrate its management and strategies with a software and a data warehouse that fits them. Therefore, Agna is lacking all layers of this framework, and it has been looking for the implementation of a unified portal for vendors, data warehouse, and a data mining system that does not depend on human structuring the unstructured data. Therefore, Agna should be looking for a software that can unify all departments through a one access portal, a cloud-based software as a service SaaS, that takes into account all the departments involved in the supply chain process, including the purchasing department, sales department, logistics, and warehouses.

1. Analytic hierarchy process (AHP)

AHP will be used to further understand the risk and strategies available for Agna, and come to decisions using the hierarchy process, answering the question:

* 1. Possible scenarios:

From the interviews with the CEO and COO, we understand that the company is looking for different available options (Naci, 2020). These options include different scenarios that include different risk cutting strategies that lead to cutting costs in the operational activities of Agna as a whole and for the inventory waste specifically. The common goal is reducing the inventory waste by 30%, or what is equal to 376,985USD. To do so, there are two main strategies that the management sees as viable options. These options are one of these two strategies:

* Cost strategy. A strategy that depends on cutting the cost taking into consideration the financial and economic risks as primaries. Such a strategy would mean that the company is looking at the cheapest options that still provide the efficiency needed to have a product that fits PepsiCo standards. This will include a departmental ERP that functions between the sales and logistics department to forecast sales, process purchasing, and production orders. This solution would also involve some cost-cutting when it comes to staff, including the lay off of the input department and the merger of the purchasing and sales department. The last step would be selling the excess product directly to the local market for cheaper prices rather than distributors, with up to 10% price off, allowing the company to avoid a possible 130,348USD, which is equal to 22% of the total inventory waste. This strategy does not limit the inventory waste by 30%, however, it aims at cutting cost in different parts of the supply chain process, such as staffing and the scale of the ERP, and through sales forecasting and purchasing process.
* Flexibility strategy. A strategy that focuses on shifting the whole supply chain process through empowering the logistics department through having bigger power in the inventory. This goes through having a cloud-based ERP system that is integrated through the sales, accounting, and logistics department, supported by a CRM that ensures that the outbound stream of the supply chain is also well planned and managed, allowing Agna to ship batches on the date and lower its finished product inventory massively, cutting the time for the process of processing orders described in chapter 4, which costs time, money, and space that can be used for different inventory. Furthermore, the input department is no longer needed as the software has integrated cross-departmental communication and data input. Furthermore, switching from periodical purchasing to a certain limit that is set on the ERP that balances the shipping costs, and cutting the 3rd party warehouses, which by itself, should cut the inventory waste by the more than 30% caused by inner-city shipping, handling, 3rd party warehousing, late delivery, and late inventory process. This strategy tackles the 30% inventory waste while optimizing the company’s sales forecasts, accounting, relation with customers, organizational communication, and appropriate staffing and training.

*Figure 6.1*

* 1. Conclusion

The two strategies are viable and are easy to put into effect. As the workforce in Agna is rather educated, 87% of workers in administrative positions have at least a bachelor’s degree, this will allow for an easier transition and a training period. Implementing any of both theories would lead to a cost cut. However, the cuts focus on rather the supply chain as a whole rather than inventory waste, and it relies on staying relevant and close to the status-quo rather than having an efficient and effective change that would lead to the right implementation of a BI system. On the other hand, the flexibility focuses on creating a plan that will lead to the drop of the 3rd party warehouses, leading to a massive cut in the inventory waste, while redefining the supply chain thoroughly with some organizational changes. The cost of training is admissible in the case of Agna, as it will not be a recurrent thing, but can rather be done through staffing through trained staff, or having a specialized member of the IT department with extensive training on the ERP/CRM that can train the colleagues on their departmental roles and possible uses of the software.

1. Conclusions

In this chapter, the answers of the sub-questions will be given combined with their perspective answers, leading to the answer of the MRQ and the final conclusion of this research.

1. What is the origin of the biggest risks in terms of the supply chain that the company faces within the next financial year?

The management priority concerning the supply chain is the operational risk followed by the financial risk, while the human resources risk has proven to be of least importance. Meaning that Agna acknowledges that the operational management of the supply chain has many flaws that need to be addressed while giving appropriate attention to the financial risk of the strategies chosen to address these issues as shown in table 1.

Furthermore, the supply chain process of Agna was broken down into 4 main parts, 1)Planning and ordering 2)Warehouse & fulfilment, 3)Bottling, and 4)Distribution. Through breaking down and studying there are various flaws in the process, starting with the planning and ordering with a major safety margin and margin of error that goes up to 7%, followed by a bureaucratic process that has to go between different departments and take up to 4 days to be fully processed within the organization itself before having it sent to the supplier. This is the first step in a block of flaws, as this lack of forecast, inability to process information properly, and periodic purchase of materials lead to the rent of 3 different warehouses that cause around 40% of the total waste inventory through over stacking, bad infrastructure, distance to the bottling factory, where in many cases they end up being unused due to such mistakes. When it comes to the bottling part, the process goes the same way that planning and ordering go, taking up to 4 days to process a production and sales order, which can be used in having better delivery times.

To conclude, Agna is facing different obstacles in the way of having a cost-efficient, flexible, and stable supply chain due to human errors that can be avoided easily through proper project and supply chain management.

1. What type of solution can Agna Implement to achieve its goals in terms of efficiency?

For this question, the 3 layers of data, logic, and access. Through the data layer, the research pointed out that Agna currently lacks proper data management, such as harvesting and management. The company currently uses hard drives to store its financial data, and paper trails and excel sheets with orders and purchasing, which is unsustainable for a multi-million dollar company. It is important to note that Agna is not capable of maintaining a data warehouse or creating its own ERP software, and is best at using a cloud service from a SaaS, or a core data warehouse. The logic layer shows that Agna lacks algorithms in its software that allows one big weak point that the company has, which is sales forecast, and warehouse and inventory management, with the access layer concluding that the company needs a portal software that allows access through different departments cutting the whole data input process in the company.

To conclude, the company needs an ERP and possibly a CRM to connect its departments without having to relate to different departments and cut the lengthy processes. Furthermore, having one portal software that can lead to different departmental roles.

1. **How can the cost and benefits Agna is set to face from the implementation of an efficiency system be measured through a use-case of a current bottleneck in terms of international efficiency?**

The company has two viable strategies the can follow to limit their inventory waste, a cost strategy, and a flexibility strategy. While both strategies include similar steps, the flexibility strategy has a bigger focus on creating a digital infrastructure within the company that can lead to sustainable supply chain and limits the risks, through creating an ERP that involves the whole organization, closing the input and integrating the purchasing department within the logistics team. It also allows the sales forecast to be produced through the ERP rather than the error viable human-based forecast. It also limits periodical purchasing that eventually leads to an excess of ordering and damaged materials in the warehouses and eventually leading to cutting costs on the inventory warehouse and the rent costs from the warehouses.

On the other hand, the cost plan does meet the proposed cut in the inventory waste, however, it is easier to put into action, it involves a limited ERP system and focuses on cutting different costs through the chain rather than cutting down the inventory waste directly (Adiguzel, 2019).

***“*How can Agna s.a leverage data collection and processing to optimize its supply chain operations by implementing a BI system within the next financial year?”**

As the research shows, Agna s.a currently has different flaws in its supply chain considering that it goes in parallel with its financial growth, with a lack of digital presence through the supply chain or in the organization itself. Therefore, it is not only important to reduce inventory waste, but also essential to digitalize the communication and data management methods within the company as a whole and the supply chain specifically (Bryman & Bell, 2011).

Through the first question, it becomes clear that Agna has expenses that can be easily cut off that are directly causing the waste of inventory, which is the bad forecasting, bureaucracy, and periodic ordering. This causes major financial losses within the supply chain, either the inbound or outbound stream, caused by the rigorous process that orders have to go through. Adding that expanding storage facilities is costly and causes more damage than good because of that issue.

Based on the multilayer framework for business intelligence, the research indicates the lack of the proper infrastructure for Agna to have its own ERP data warehousing and system and would need to rely on 3rd party companies to be able to fit in any strategy the company takes. However, such a system must use a one portal system that allows different departments to log in to the same software than having different software for each department.

By the end, it comes to deciding on two different strategies, one that cuts budgets and artificially trims the supply chain for a short term solution, and the second being an aggressive intervention in the supply chain as a unit, rebuild its blocks and create a whole new system for the supply chain that limits the risks on the longer term, and cuts the company’s inventory waste.

1. Recommendations
   1. Introduction

This chapter discusses the implementation plan, cost-benefit analysis, and the limitations of this research, and advice for future research. The implementation plan is a collection of actions through a timeline of Agna to be able to apply the **flexible strategy.** The cost-benefit analysis discusses the costs and benefits coming from these actions, and the limitations and advice discuss the improvements and additional research that can be done to this research in the future.

* 1. Implementation plan

In order to implement the plan, Agna should follow the flexibility plan laid out in chapter 6, and figure 6.6.

Step 1: Purchase a software

The first step that Agna should do is decide on the software it wants to have. Software such as SAP includes the various services that Agna is looking for such as sales forecasting, accounting, purchasing, production orders, in-mail, and stock tracking, and is a cloud base, cutting the costs for Agna. Through communicating with SAP, Agna can receive a customized price depending on the required services and number of employees using it.

Step 2: Organizational change

Agna needs to reorganize its departments, through integrating the purchasing department with the logistics department or assigning a member of the logistic teams for purchasing, rather than having a 3 people department to take care of that. Furthermore, the company needs to remove the input department. The company must build good communication channels within the organization through the ERP, and through team buildings, retreat and training, as the employees from different departments used to communicate through the input department rather than directly, it is also essential for Agna to train its employees, or key employees on SAP and their role and the proper way to use it.

Step 3: changing the supply chain

The last step Agna needs to do is to change the status quo in its supply chain management. Agna needs to cancel periodic orders and base its orders on its need to limit the excessive amount of inventory waste the company ends up with annually, this will assist the company not only in cutting costs and having a more efficient supply chain, but it will also allow the company to give up on the rent of the warehouses that are off-site and cause the biggest inventory waste within a year of the plan implementation.

* 1. Cost-benefit analysis

The implementation of a general system that control and manages the supply chain along with other operations in the company would introduce great gains in efficiency and would effectively limit, and in time eliminate the current issues with inventory management, and other snowballing issues that derive directly from the large presence of manual processes in the workflow of Agna. Based on the data provided Agna which calculated that they had inventorying inefficiencies amounting to $310,571 in 2016, $420,736 in 2017, and of $525,311 in 2018.

The goal is to reduce these inefficiencies by at least a yearly 30%, which would translate in savings of approximately $180,000 for the year following the implementation. In the same time Agna, would be able to write off and dispose either by sale or depreciation of the remaining inventory from previous years. Nonetheless, the write off is not considered one of the main benefits of the implementation, but rather comes as a benefit of the financial processes involved in putting the system to work, and re-configuring the internal financial and monitoring management system of the company.

Analyzing the costs which would be incurred by the implementation of an automated business intelligence system can be divided in four categories, namely the costs of purchasing licenses for the users of the system, the costs associated with the training and implementation of said system widely within Agna’s workflow, the hiring of an IT team to manage and resolve issues in real time, and the costs associated with the update of current old hardware the company possesses in its whole distribution network, so that they can effectively handle the new software.

To calculate these costs the licensing costs are calculated based on the pricing Albanian resellers of Microsoft Dynamics NAV, which is approximately $70,000-$130,000 for large corporations with hundreds of employees, along with a yearly updates and maintenance fee of $35,000.

The implementation of a BI system would necessitate the hiring of 4 network specialists and IT workers, which usually are paid a yearly wage of approximately $12,000 in Albania, while other mid-level specialists who may be involved in the manual processing of materials and information are paid around $9000 yearly. Currently there’s approximately 10 people working with manual processing of data and information for the company costing the company a total of $90,000. Training current finance and operations employees, would cost an approximated $17,000 for materials and professional corporate programs.

The updates of old computer systems, to more updated and safe systems, can be approximated at around $120,000 so that all Agna’s main inventorying and processing points are well-equipped to run the business intelligence software.

Agna hence would have to invest a total $267,000 for the direct one-time costs involved in the implementation, with $17,000 going to training, $120,000 to hardware upgrades, and $130,000 in software. The company expects a breakeven in 2 years for this investment, or $133,500 a year.

Currently Agna expects the following years to have inventory increasing inefficiencies as per the observed trends, of $633,613 in year 1, $740,983 in year 2, and $848,353 in year 3. The goal is to have a decrease of these inefficiencies of 30% in the first year, 35% in the second, and 40% in the third, compared to the projected values. This would translate to savings of $190,084, $259,344, and $339,341 for each year respectively.

Based on the above, performance for scenarios are constructed, one where the BI is implemented and the other where the situation continues as it is in the present. As per the present dynamic, the company expects total costs of $723,613 for year 1, $830,983 for year 2, and $938,353 for year 3.

Following the proposed changes in the labour dynamics, as well as the reduction in inefficiencies, the company estimates yearly total costs of $526,529 for year 1, $564,639 for year 2, and $592,012 for year 3.

According to the expected break-even agenda the company expects to cover one-time costs incurred within a 2 year frame, which would translate to a total improvement of 9% of $63,584 for the first year, 16% or $132,844 for the second year; and once the costs are covered, an improvement of 37% or $346,341 in the third year.

The tables below provide more quantitative information on the cost benefit analysis.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Assumptions | | | |  |
| Inventory Optimization due to implementation of BI (reduction in losses in %) | 30% | 35% | 40% |  |
| Inventory optimization in USD | $190,084 | $259,344 | $339,341 |  |
| Table 5 |  |  |  |  |
|  |  |  |  |  |
|  |  | Year 1 | Year 2 | Year 3 |
| No Change | Labor (manual data processing) | $90,000 | $90,000 | $90,000 |
|  | Inventory Inefficiencies | $633,613 | $740,983 | $848,353 |
|  | Licensing | - | - | - |
|  | **Total** | **$723,613** | **$830,983** | **$ 938,353** |
| Table 6 |  |  |  |  |
|  |  |  |  |  |
|  |  | Year 1 | Year 2 | Year 3 |
| Implementation of BI | Labor | $48,000 | $48,000 | $48,000 |
|  | Inventory Inefficiencies | $443,529 | $481,639 | $509,012 |
|  | Licensing | $35,000 | $35,000 | $35,000 |
|  | **Total** | **$526,529** | **$564,639** | **$592,012** |
| Table 7 |  |  |  |  |
| Total investment cost | Software Microsoft Dynamics NAV | $130,000 |  |  |
|  | Training | $17,000 |  |  |
|  | Hardware | $120,000 |  |  |
|  | **Total** | **$267,000** |  |  |
| Table 8 |  |  |  |  |
|  |  | Year 1 | Year 2 |  |
| Breakeven agenda | To break even in 2 years based on the investment | $133,500 | $133,500 |  |
| Table 9 |  |  |  |  |
| Total Savings/Optimization |  | Year 1 | Year 2 | Year 3 |
| Total Optimization per year | $63,584 | $132,844 | $346,341 |
|  | As a percentage | 9% | 16% | 37% |

Table 10

* 1. Limitations of the research:
     1. Improvements for current research

Even though the conclusion is solid and supported by all the data collected, like most research, the researcher has found restrictions and constraints while conducting this research:

First of all, the current state of the world in general and Albania specifically. This research has been done during winter and spring 2020 where the COVID-19 pandemic was ongoing. This has led to different difficulties, such as the ability to put in the system to work and collect data after it is functional, communication within the company, a full-on lockdown in Albania that lasted for 2 months, and a very strange economic period that took the country and the world by storm. The fluctuating exchange rates between the Albania Lek and the American Dollar has been going up and down with no stability in the line. This comes with the fear of an economic crisis in the region Agna works in and the company investing in resisting such a risk.

Second of all, the research is mainly based on interviews and information collected from the company’s management with information from the audit report from Agna, however, getting an accurate price on the software has proven close to impossible as most companies that sell a cloud base ERP require further information about the company and their functionality level which, in these unstable time, they were not able to clearly acquire or has refused to establish a final price until all the information asked for are available.

Last, the research is studying a theoretical solution and different changes might come on the way. Even though the researcher has tried to consider everything, it is always the nature of the business to have a contingency fund and be prepared for different issues that might arise along the way.

* + 1. Additional future research

Future research regarding Agna’s inventory cost should not focus on implementing a BI or DA system anymore, but rather focus on the project management side of the supply chain.

Additional research should focus on the supply chain risk management and the company’s preparedness to sustain a profitable supply chain in the long term by cutting unnecessary costs and amplifying its communication and IT infrastructure.

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1. # Appendices

   ## Appendix 1: Interview with COO Mr. Koxhuku

   1. What are the main parts of the supply chain?

   Well the whole process is a bit complicated and bureaucratic that involves various departments, but to put into 4 main parts, its planning and ordering, warehouse and fulfillment, bottling or production, and distribution, which is outsourced.

   1. What is the purchasing and production process?

   Well the process is a bit complicated to be honest, we have been trying to change it for a while now, but we still have not decided on the most appropriate way to do so. We are trying to find a way to balance the organizational structure without having a department be overwhelmed or under work. For the purchasing process, we need to start with our sales forecast (Baars & Kemper, 2018). The sales team start by building a sales forecast according to previous years sales according to regions. This usually has a margin error of 4 or 5, but usually end up having a bigger than the margin. After forecasting the sales, the sales department fills in a purchase order that goes to the logistic department with our sweet in office mailman, Geri, it gets crosschecked with our current warehouse capacity and then signed by the logistics team to be passed to me. I give the final signature and send it to what we call the “input” department, where 3 employees fill in the data files, and enter it in the system, and this is our weak point, as hiring more people has proven not very useful, and it with the load of work coming from all the sub companies, such purchases can take 24 hours to 4 days sometimes to be inserted in the system and sent to the purchasing department to have it ordered.

   The production is very similar, as you know, we bottle in our facility here, in Albania, and we receive product that is ready to be produced. As we have a major market, we are almost bottling 24h a day, but through the winter these working hour dips. We usually receive the shipment, and have it stocked up, send a report to the “input” department from the head of logistics team. As these are usually smaller paper, they get processed within 24 hours. When a sale is made, the sales department sends a production order to the bottling facility with the sales order, quantity, specification, and importance of production time. Once it is shipped, the logistics team fill in a shipping report and send it to the “input” department to input it, and a copy to the sales department to confirm it.

   1. I am trying to build a risk to strategy table, would you mind filling this table up with the CEO according to the strategies?

   See TABLE 1.

   1. Why does Agna still depend on 3rd party warehouses?

   These 3 warehouses have been an ongoing issue for a few years now, and with the current production growth that Agna is going through, we are tirelessly looking for a solution, these storage facility ends up having most of the unused inventory because of the cost of shipping them to the bottling establishment, it is always better to produce what we have on the ground than to ship from the warehouses. They are also built and owned by a 3rd party company and have a some staff working there without actually having any significant input on the supply chain, in total, these storage units had what is equal to 240 thousand dollars. That’s a lot of inventory waste, I believe they play a big role in the problem you are trying to research.

   1. Which strategy do you see fit for Agna, a cost or flexible strategy?

   Well I prioritize cost because these are strange times we live in and we need to ensure survival. However, dropping the fact that we might be going into a recession, if not a depression, then I would definitely take a flexible strategy, I can totally see how it can be efficient on the longer term. And really, it is not that expensive.

   ## Appendix 2: interview with COO Mr. Naci

   1. Does agna work outside its main bottling facility?

   We currently are renting 3 storage units from a 3rd party. However, we are planning on not using them hopefully when everything settles down

   1. Why does Agna lack a proper ERP system

   I have never been into technology, I trust our great workers to do a great job, we hire the best of the best, and we always expect the best from our employees. But you are correct, this has been an issue discussed in the company for a while, and we are working toward that. However, the current events have stopped us from doing so.

   1. Would you please fill in the table with Mr. Koxhuku, the risks need to add up to 1 to decide on a certain strategy and risk.

   Check table 2

   1. What do you think is the next step for Agna?

   Well, my main policy for the group as a whole is merger, buying, expanding and growth. However, these are uncertain times, and we are focusing on coming out with the least possible financial and human capital losses.

   1. Which strategy do you see more fit for Agna in the near future between cost, quality, delivery, and flexibility?

   Well, it is impossible to take quality into consideration as we have specific requirements we need to live up to, as for the delivery, we depend on 3rd party shipping companies and distributors in different countries we work with small offices based in the countries. This is for a simple reason which is the we cross borders and it will be of great cost and time to establish a shipping company, we are very satisfied with the companies we deal with and so are our customers. So, I would choose the flexibility as my primary strategy for our current supply chain, even though flexibility could mean we might have to face different risks on higher levels, I am sure we have the human capital to deal with it. However, because of the current times, I would choose cost over flexibility as it is a matter of maintaining profit through this tough economic year rather than growing.

   ## Appendix 3: Maturity Survey

   ***Business (&Tax) environment***

   |  |  |  |
   | --- | --- | --- |
   |  | ***Current State*** | ***Desired State*** |
   | **Business (& Tax) Environment** | Informal | 1. Managed |

   |  |  |  |  |  |
   | --- | --- | --- | --- | --- |
   | ***Result per sub category*** | ***Current State*** | ***Desired State*** | ***Assessments*** | ***Recommendations*** |
   | **Business strategy** | Informal | 1. Managed | The organization is not fully aligning its fiscal dynamics with the strategic position of the company. Taxation matters are not discussed deeply and in detail at the senior management level. | Tax has to become a more integral part of the management and decision making process. There has to be more focus on the impact of strategy and there has to be a better alignment between the larger goals of the organization and fiscal issues. Discussion about taxes has to be deeper and broader. |
   | **Tax strategy** | Informal | 1. Standardised | The company relies on informal behaviors to handle tax matters. Agna lacks procedures that would allow fiscal matters to be used as a strategic component. Agna relies too much on individuals to deal and handle taxation, instead of procedures. Management and strategic decisions are not tailored to deal with the continuous changes in the fiscal legislation. | Agna should implement procedures to use taxation as one of the pillars that create, shape and hold the strategic components of the organization. Management should treat tax as one of the focal components of strategy and it must be a separate topic of discussion. |
   | **Tax awareness** | Informal | 1. Managed | There is an informal level of tax maturity pertaining tax knowledge, its related skills and the appropriate level of fiscal knowledge diffusion in the company.There is a lack of breadth and depth of discussion at the senior level about fiscal matters. There are not metrics that analyze the tax function from multiple levels, but rather a binary KPI on tax performance. | There should be a more organized discussion at the senior level about fiscal matters. The understanding of the tax function will allow Agna to construct strategies that further optimize financial performance. |
   | **Soft controls** | Informal | 1. Managed | The company has highly regarded ethics, and puts a lot of emphasis on ethical behavior.Their goals in terms of taxation are technically all based on the principle of ethical behavior, and optimization.A lot of behaviors and ethical issues are dealt implicitly. | Agna should implement hiring policies that are more in line with their fiscal needs, focusing on hiring experts that have experience in fiscal issues. There has to be a more explicit and procedural approach to issues of ethics, and human management in tax. Procedures and KPIs should be used to gauge performance. |

   * 1. ***Business Operations***

   |  |  |  |
   | --- | --- | --- |
   |  | ***Current State*** | ***Desired State*** |
   | **Business Operations** | Informal | 1. Standardised |

   |  |  |  |  |  |
   | --- | --- | --- | --- | --- |
   | ***Result per sub category*** | ***Current State*** | ***Desired State*** | ***Assessments*** | ***Recommendations*** |
   | **Business processes** | Informal | 1. Standardised | Processes and procedures are not fully documented and formalized. | There should a tangible process that outlines documentation and procedures, which would allow the company to operate optimally. |
   | **Information technology** | Initial | 1. Standardised | Currently IT is not a focal point of the strategic management and alignment of Agna. | IT should be integrated as strategic variable to be used in a continuous monitoring and improvement process. |
   | **Reporting** | Informal | 1. Managed | Tax reporting, albeit being performed regularly and focused on tax compliance still needs to be formally constructed and documented. | Tax operations and procedures must be performed at their own pace and not just as a generic part of the larger financial operation of Agna. |
   | **Organisation transformation/ Change management** | Initial | 1. Standardised | Tax impact is not a metric that is measured or quantified at Agna. | Measuring tax impact can allow Agna to do a deep and revealing analysis on its performance and the impact different fiscal strategies have on their operations and profitability. |

   ***Monitoring/Testing***

   |  |  |  |
   | --- | --- | --- |
   |  | ***Current State*** | ***Desired State*** |
   | **Monitoring/Testing** | Standardised | 1. Managed |

   |  |  |  |  |  |
   | --- | --- | --- | --- | --- |
   | ***Result per sub category*** | ***Current State*** | ***Desired State*** | ***Assessments*** | ***Recommendations*** |
   | **Internal and external** | Standardised | 1. Managed | There is a degree of monitoring and performance benchmarking. There are assessments of the performance of controls through monitoring activities. | There has to be a more encompassing process that allows for better management of monitoring and data gathering processes. This in turn would generate metrics to be used in evolving specific procedures and processes. |

   * 1. ***(Tax) Assurance***

   |  |  |  |
   | --- | --- | --- |
   |  | ***Current State*** | ***Desired State*** |
   | **(Tax) Assurance** | Standardised | 1. Optimised |

   |  |  |  |  |  |
   | --- | --- | --- | --- | --- |
   | ***Result per sub category*** | ***Current State*** | ***Desired State*** | ***Assessments*** | ***Recommendations*** |
   | **External** | Standardised | 1. Optimised | The company deals with assurance issues in a standardized manner. | Agna can improve its process by implementing procedures and processes that facilitate and direct the assurance processes. |

   1. ***Tax function building blocks (per item)***

   Set out below are our detailed findings of our review of the tax function based on our T3M methodology. In this section we have included findings per building block and per item.

   * 1. ***Business (&Tax) environment***

   |  |  |  |
   | --- | --- | --- |
   |  | ***Current State*** | ***Desired State*** |
   | **Business (& Tax) Environment** | Informal | 1. Managed |

   |  |  |  |  |  |
   | --- | --- | --- | --- | --- |
   | ***Result per item*** | ***Current State*** | ***Desired State*** | ***Assessments*** | ***Recommendations*** |
   | **Vision & mission of the business** | Standardised | 1. Managed | Agna has set a clear vision and mission which is documented inthe wider strategy of the business and is published on the company’s website,available for all the employees, stakeholders and the wider public.Communication with staff is relatively effective and it’s done generallythrough emails and rarely informal and verbal. Processes and operations are set by senior management and arenot created to align with the vision and mission of Agna but are aimed to servethe greater purpose and to achieve the objectives set by the vision and missionof the company every year in a general meeting. Although, it is likely that the understanding of the strategybelow senior management is very limited. | Vision and mission should be agreed, documented andeffectively communicated internally to all employees and external stakeholders.The employees, having a clear understanding of the general picture of thebusiness and their contribution to it, tend to have a greater efficiency. Actions should be taken to address any misalignment of thebusiness environment and the internal environment. |
   | **Awareness of and importance of tax to Senior or Top Management** | Informal | 1. Standardised | There is understanding and acknowledgement that tax matters tothe organization. Tax issues are discussed but only in general meetings andwhen a specific concern arises. In case there is a new law on tax that willaffect the business, it is analysed and discussed and based on the effect thatis expected to have, meetings are held with the directors and shareholders toagree on how they will approach it. There are no meetings held where the full range of taxes isdiscussed. | Agna should have clear tax values that are effectivelycommunicated to the respective decision making units within the company. Taxissues should be on the meeting’s agenda in a formalized way and not only whena specific issue arises. |
   | **Tax vision, mission & risk appetite and alignment across the business?** | Informal | 1. Managed | Overall tax risks and the possible reputational damages areconsidered by the management. Agna has a simple tax strategy which is fullcompliance with the legislation. The desired behaviours are implicitly known by the employees.There is no defined overall risk appetite agreed by the broader business. Thevalues and risk appetite are communicated on an ad-hoc basis and when specific situationsor problems arise. | Agna’s management should have a clear view on tax vision,mission, tax strategy and risk appetite and this should be documented. Also, thereshould be specific processes in place to align the organizational activitieswith the overall tax strategy. Desired attitudes and behaviours should be wellcommunicated and respected. |
   | **Goals, objectives and KPIs for tax and the Tax Department.** | Informal | 1. Standardised | Some goals for the people responsible of tax in the finance department exist. They are typicallyfocused on total compliance with tax and zero fines tolerance. However, other tangible performance metrics or other KPIs are not determined. | There should be determined goals, objectives and KPIsdetermined for the tax department aligned with the overall business strategyand tax strategy. These KPIs should be mainly quantitative and effectivelycommunicated to the relevant audience. |
   | **Tax roles and responsibilities - delivering the mandate for managing tax in accordance with tax strategy.** | Standardised | 1. Managed | Formal processes and responsibilities are defined within thefinance department, however awareness of tax is not fully embedded in thebusiness operations. The responsibility for tax is seen as a central financedepartment responsibility, and not business wide. | Agna must make tax an integrated part of the business, putting more emphasis on fiscal dynamics than the current treatment that is being handled by the financedepartment. Specific KPIs related to tax should be used by the Agna as part ofits tax strategy. |
   | **Business partner relationships between the Tax Department and other departments or organisational units.** | Informal | 1. Standardised | The importance of tax is recognized by Agna but therelationship between departments goes no further than collecting and reportinginformation. Agna holds periodic meetings where tax is also discussed amongother issues, but there are no specific meetings to discuss tax matters only or that focus on fiscal strategy or dynamics. The activities are inreaction to demand and not a negotiated result. | There should be a continuous and formal relationships at theright levels such as regular meetings, workflows that go beyond departmentalboundaries. Efficient lines of communication should be set between the tax department andother organizational units in order to meet mutual objectives. |
   | **Stakeholder management - tax strategy and policies communication (internal and external).** | Informal | 1. Standardised | There is awareness amongst relevant stakeholders and someunderstanding of their requirements and concerns regarding the organization’stax position. The stakeholders tend to mainly put emphasis on total compliancewith the local legislation regarding tax. Communication with the mainstakeholders occurs when an issue arises and it has a great effect on thecompany, thus immediate action is required. | A documented and communicated policy regarding thecommunication with stakeholders which covers key issues should be created andfollowed. Stakeholders that are interested should be informed based ontheir requirements and concerns. |
   | **Tax knowledge, skills & training across the business** | Informal | 1. Standardised | Minimum tax skill requirements are determined and used in therecruitment process by the HR department. Further training is done on the job. There is minimal trainingavailable on general issues and on an ad-hoc basis by external consultantswhenever it is considered necessary. | Tax skillset requirements should be clearly defined anddocumented for all the relevant areas. Also, a tax training plan should be inplace, documented and communicated effectively. The training plan should make sure that the appropriate staffis trained on appropriate subjects when necessary. |
   | **Transparency reporting and Total Tax Contribution - organisation awareness** | Informal | 1. Managed | Calculations of transparency reporting are focused on thecalculation of corporate income tax and indirect taxes. There is a generalawareness of TTC but no data collection and analysis is underway. Agna is aware of the importance of TTC on the image of the company. | Agna should develop and implement a policy regardingtransparency reporting and TTC. This policy should be well documented andcommunicated effectively within Agna. Furthermore, TTC transparency should havean explicit relationship with CSR and should be integrated in the CSR policy. |
   | **Tone at the top and ethics** | Standardised | 1. Managed | The company has its values clearly communicated to a broad audience within the organization. Management is clearly aware of issues and uses them as a supporting framework on which strategy is built.There are certain tax values and ratios that decision-makers chase as indicators of sustainability.Ethical behavior is highly encouraged, and people get frequently updated on the issue. There is a culture in the organization that put emphasis on ethical behavior, and appropriate information sharing practices.The company's reputation is tethered to the ethical level it conducts business, and pivotal to the line of work of the organization. | There should be a continuous updating process for the tax values, and functions used to derive them; as to ensure an accurate view of the company's position. Ethical behavior should be more procedural, and based on technical assessments while continuously being modernized. |
   | **Human Resource Management (individual performance and reward to ensure staff have the skills to deliver the business strategy)** | Informal | 1. Managed | The company is structurally sound and functional.Skills needed for each of the units to work are present in the makeup of these business units. Experts work based on loosely described procedures, while relying to a tangible degree on human factors to perform their jobs.While good behavior is recognized, there are no formal structures to deal with the reward it. There are best practices in place, but they are implicit.There are no specific structures that set up the tone and create company culture; these processes happen in a diffused and informal way. | HR policies should be put in place that reward appropriate behavior and that formally generate the pillars of the company's culture. This should not be something that happens without a direct structure of control, and all these factors should be geared in achieving the companies goals, vision and mission.This alignment will effectively allow the company to attract the best experts from the employee pool, by offering them reward systems aligned with their and the company's interest. |

   * 1. ***Business Operations***

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   |  | ***Current State*** | ***Desired State*** |
   | **Business Operations** | Informal | 1. Standardised |

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   | ***Result per item*** | ***Current State*** | ***Desired State*** | ***Assessments*** | ***Recommendations*** |
   | **Processes and procedures - documented and maintained** | Informal | 1. Standardised | There are generally well known and fully working operations processesat Agna, but no formal documentation of the processes exists. Operationalperformance relies upon individuals’ expertise instead of written procedures. | The company should set a framework for documentation ofprocesses and procedures manuals which are clearly defined and effectivelycommunicated. Documentation of the above is to be stored, regularly updated andmaintained in a central repository, where all relevant users can get access. |
   | **IT strategic alignment (internal and external)** | Initial | 1. Standardised | There is no strategic IT planning for Agna at managementgeneral meetings. Alignment of the technology with the business requirementsand applications is reactive and informal. IT in Agna has a monitoring rolerather than programming and developing role. The performance of IT is monitored on an ad-hoc basis;typically incident driven. | There should be strategic tax IT planning process in placethat ensures the appropriate planning is performed. The IT department shouldhave a more proactive role on the day-to day activities. IT risks shouldbe assessed as part of the overall risk management, where the key risks areidentified and mitigated. |
   | **Tax reporting requirements and structure** | Informal | 1. Managed | Thereare certain issues which when sufficiently material are escalated to boardlevel but there is no effective communication of the risk profile of tax acrossthe business. Tax reporting is performed on a regular basis, but no formalprocesses are in place. This is beginning to be developed in respect of thework internal audit (Financial Control) does, however the broad internal riskcategories used by the financial control do not necessary fit well with the keytax risks that should be reported to stakeholders. | There should be functioning tax operations in place which areeffectively communicated within the organization. Moreover, these should bemonitored and evaluated periodically to assist implementation of improvementswhen necessary. |
   | **Organisation transformation** | Initial | 1. Standardised | At present, Agna does not have a specific work plan with relevantwork streams and assessment of tax impacts when the organization undergoessignificant operational or system based changes. It is worth mentioning that so far in therecent years, Agna did not go under any major change mentioned above. | Agna will need to undergo a system based change which will allow IT systems to be fully integrated and functional as support to the financial and operational activities of the firm. These systems will then allow for a smooth process in organizational change as a variety of variables and impact KPIs can be analyzed and derived from a system that manages financial data properly through IT. |

   * 1. ***Tax Operations***

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   |  | ***Current State*** | ***Desired State*** |
   | **Tax Operations** | Informal | 1. Managed |

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   | --- | --- | --- | --- | --- |
   | ***Result per item*** | ***Current State*** | ***Desired State*** | ***Assessments*** | ***Recommendations*** |
   | **Approach to tax authority engagement** | Informal | 1. Standardised | The company does not seek or engage in agreements with the taxauthority, and relies on experience to or external advice to perform the formaldecision making processes regarding engagements with the tax authority. There are no policiesgoverning the relationship of Agna and the Albanian Tax Authorities. | Policies should be constructed to formalize the relationshipwith the Tax Authority. These policies should be based on internally decidedconditions which should be met that will trigger Agna to seek from theauthorities relevant agreements regarding the fiscal dynamics. These engagements would also help in the construction ofpolicies based on the strict interpretation of the fiscal law that Albanian TaxAuthorities have, making other fiscal and financial processes congruent withwhat is considered best practices. |
   | **Legislative change** | Informal | 1. Managed | Legislative updates are received by the company by twosources, one being internal in the position of a legal advisor, and the other beingexternal in the form of an outside advisor. There is no policy in place dictating the temporal, orqualitative apprehension of fiscal legislation changes. Fiscal issues are tackled ad hoc; every issues is discussedwith management on a weekly basis. In case these changes affect the group at large, there areconsultations taking place between the local entity and the key stakeholders.If the changes have a wide and deep effect on the organization, immediatecontact is made with the responsible departments (locally and globally), andthe relevant stakeholders. | Legislative updates should be received through a definite andformalized procedure. Monthly deadlines should dictate the gathering of informationon fiscal issues – thus reducing the dependence on ad hoc updates inprocedures, in congruence with legislative changes. A monitoring process should be set in place to ensure that thegathering of data, and to ensure that the apprehension and implementation ofthese changes is done in a timely and adequate manner. |
   | **Documentation of tax planning (All taxes)** | Standardised | 1. Managed | Tax planning is only done in the context of budgeting. Thetaxation plan is based on forecasts generated by the budgeting data as per thelast fiscal legislation. There is little to no specific documentation that goes intosubstantiating the fiscal policy that the company follows. Fiscal policies are designed and implemented as part of thebroader financial politics, and followed as part of the same process. | There should be a documentation process in place thatsubstantiates fiscal decision-making and the application of compliancepolicies. Fiscal policies should be given special attention and plannedindividually from other financial policies, and then consolidated with thelarger financial policies of the firm. The documentation process should be continuously reviewed withan external advisor, to provide for a high quality and compliant system, thatis dutifully based on the current legislation, tax authority directives and industrybest practices. |
   | **Implementation of tax planning (All taxes)** | Standardised | 1. Managed | There is no separate fiscal planning process in place, and allfiscal planning is done in the context of financial planning and budgetingactivities. There are no set dates or temporal specifics or deadlinesregarding taxes; all these procedures are done ad hoc, but with a high focus oncompliance due to internal policies. These policies are not formalized butrather followed as best practices. There is only one tax related KPI, and it only regards “finestaken”. Implicitly and explicitly enforcing the policy of “complete and totalavoidance of fines”. It’s a very simplistic KPI, but useful to keep the companyperforming optimally while avoiding clashes with the Tax Authorities. Internal controls make sure that these processes arefunctional and operational, fulfilling their roles. | Fiscal planning has to become a standalone process, and thenit can be consolidated with the broader financial plan and budgetingactivities. This ensures that most risks associated to the highly dynamicfiscal environment can be timely avoided. The tax procedures should be continuously monitored and theoutcome of the implementation of different strategies should also be assessedappropriately. For this assessment and for a more data-based approach on fiscalmatters and their impact on the organization, more complex KPIs should be inplace. KPIs will put a quantitative edge to the effect of fiscal planning and willprovide hints pointing to a direction of continuous improvement and financialoptimization. |
   | **Process and controls** | Informal | 1. Managed | The process of tax accounting is done as part of the largerprocess of financial accounting procedures. Tax specificities are embedded in the respective financialprocesses and not treated in a separate or specific manner. There are no definite tax positions in place, and tax mattersare handled by accounting and finance personnel. Most processes, unless for the application of mathematicalfunctions to data containing files (where excel is used), are done manually.There is a lot of data entry into excel, where individuals will plug in numbersas per the content of approved invoices. Control procedures are placed in the creation and acceptanceof invoices rather than in the process of having them digitalized. There is a close cooperation between individuals dealing withfinancial matters, and thus taxation issues are discussed and tackled withappropriately, and timely. Timing is a major factor in the relationship Agna has withtaxation, as a pivotal part of temporal compliance, among other forms of fiscalcompliance. | There has to be a larger degree of automation, which can beachieved through the use of either electronic invoicing or a good OpticalCharacter Recognition (“OCR”) system. This automation in producing tangiblereports from invoices will cut preparation times tangibly. Along with tax specific planning and forecasting, there shouldbe tax-specific controls in place to ensure a stable fiscal process. Taxcontrols should be periodic and documented. Documentation and reviews should befocused on preventative measures. The tax accounting process should be discussed with anexternal tax accountant or advisor. |
   | **Roles and responsibilities** | Informal | 1. Managed | There are roles and responsibilities which are described toindividuals by the HR staff, as per the relevant position and the respectivework process. Personnel management is there, but is mostly done ad hoc, andthrough verbal communication, or for more formal issues through email. Emailsmake up the official communication channel between management, stakeholders andemployees. Tax charges and taxation matters are handled by the sameaccountants that deal with other financial processes, and they’re managed aspart of the general accounting procedures. Tax matters along with other financial matters, are thenreviewed by the Chief Accountant, who signs them off. The role of the external auditor is clearly defined and it’spart of the operational procedure. While roles within the accounting department are clearlydefined, tax is only reviewed as part of the general procedures. | There has to be an official position that deals with taxmatters, in both terms of accounting for taxes, planning and budgeting fortaxes and reviewing other financial work that relates to fiscal matters. There have to be more KPIsused to measure tax efficiency, as well as employee experience and satisfactionin working in their specific roles. These results can be used to optimize thesystem so that procedures can be conducted faster and more easily, whilekeeping employee satisfaction, and thus output, high. |
   | **Documentation to support tax accounting** | Managed | 1. Optimised | For every major item and event there is a separate positionpaper. Documentation of events and key positions and financials isappropriately recorded, and stored in a central repository. Agna up to now usesa physical server to record this information. Temporary differences are calculated based on a balance sheetreconciliation including equity components in line with the applicablelegislation. | Agna should implement agreed upon procedures which must beperformed for specific key risk areas. Fiscal risk should be quantified andused as a basis for decision-making activities regarding tax or other financialprocesses. Management should have access to information regarding thefinancial position and dynamic of the company at any given time. To do so,interim reporting and un-finished financials should be easily accessible bymanagement. Systems should be tuned to be able to provide interim data tomanagers, and stakeholders. This would allow for more flexibility and a broaderarray of information in tackling problems that may arise while allowingrespective leaders to have a deep and broad overview of the organization at anypoint in time. |
   | **IT and tax accounting** | Informal | 1. Managed | Spreadsheets contain only standardized variables to be plugged in, but nostandardized analysis methodologies are used. Excel is still the main system used by Agna toconduct all its financial operations. These standardized spreadsheets are part of an unwrittenprocess of what is thought to be the best practice by the organization. All information is manually plugged into excel and then,connected to some other spreadsheets which usually contain the respective codes,rather than containing a mathematical continuity of what the spreadsheetsenclose in their entirety. This means that a large amount of spreadsheets, arenot automatically linked together, increasing the work which has to be donemanually. | An IT solution (ie. SAP ERP) should be implemented andintegrated across the organization; this will provide a very powerful base forconducting financial operations. This software has to be integrated with the financialreporting system, with tailored reporting capabilities, automated disclosurenotes and interfaces. Economies of experience and automation should become the focusof the company, to provide further efficiency increases as well as costreductions, temporal optimization etc. |
   | **Corporation Tax** | Standardised | 1. Standardised | There is a formal workflow description and instructionregarding positions and roles within Agna. When these instructions, which are usually delivered by the HRare given to individuals, there is a specific time-frame where employees willbe integrated within the departments and will learn from first-hand experiencethe right way to apply the given workflow dynamic. These workflows are not expansive, nor detailed but focus on the explanation ofthe functions to be performed. Best practices are given as the employees start working andlearn from peers; there are no explicit best practices. Though not explicit or highly enforced, these practices ensurethe correct completion of financial and fiscal work. | Agna’s current situation is in linewith what they need and expect from such process. Further formalization and detailing of the workflows androles, along with more training would allow for a more efficient employeeacquisition and adaption process. |
   | **Indirect Taxes** | Informal | 1. Managed | Indirect tax is the responsibility of the accountingspecialists in Agna, where experience and cooperation of individuals within thefinancial department is key to the successful filing of indirect taxes. They ensurethat the tax returns are filed on time and completed correctly. The ChiefAccountant controls and reviews the relevant documentation to ensure itscorrectness and completeness. These individuals develop in their own style, the methods toextract information from the systems, while developing solutions to problemsand applying themselves in spotting potential errors and issues. Agna pays only the VAT asan indirect tax | There has to be a tangible procedure that deals with taxationmatters. The people performing this procedure should have an established andhighly efficient communication channel between the broader finance roles andthe specific roles and duties concerning indirect taxation. Instances of problems, or deviations from the procedure shouldbe promptly identified and calibrated to optimality. Corrections and analysis of the work done should be the focusof both the Chief Accountant and another individual within the company toensure that errors are not made. |
   | **Employment Taxes** | Informal | 1. Managed | Employment taxes are the responsibility of the HR team. Agna’sHR team correctly pays employment taxes as well as managing employmentprocedures. The HR team uses their experience, but no explicit procedure,to ensure that the tax returns contain the right information and are filed in atimely manner. Individuals take care to ensure that the relevant links areefficient and working between the HR team dealing with employment taxation, thefinance department and the tax-specific staff. | Agna would benefit if employment taxation would be handled ina more formalized and procedural manner. Workflow description and process documentation andinstructions, including roles, responsibilities and specific steps must be putin place Tax specialists, the HR department and finance staff must workconcurrently and cohesively to produce an self-regulating and functioning system for employment taxation. Sufficient and relevantchecks should be in place to ensure the optimality of the system, and to avoidpotential errors. |
   | **Relationship with external service providers (including outsourced tax compliance across all taxes and/or business shared service centres)** | Informal | 1. Managed | Some data is provided as default to external serviceproviders. This is basic data showing the general business dynamic in thecompany and there is no detailed information which is predefined as “needed” byAgna standards to be delivered to external advisors. There is little to no proactive deliver of additionalinformation or data, unless specifically “asked for” or “required” by theexternal service provider. All data is delivered in Excel spreadsheets or on paper. Thereis no confirmation for the integrity of the data delivered, except for the factthat this information has been used or is to be used in formal declarations andreports. Bulk data delivery is possible, but is still in its infancy asa system and does not provide full and fast bulk data delivery. | There should be a comprehensive and clear process for theprovision and collection of relevant data and information. Predefined datasets must be collected efficiently and checkedfor consistency and completeness. Relevant data must be standardized across the organization,and optimally across the industry to provide a tangible comparative basis. Data extraction should be part of the data collection processand proper analysis of this data must be proceduralised for further use as KPIsor other indicators. There must be a growingawareness in Agna for shifting focus from the final numbers to the underlyingtransactions which produce the financial results. |
   | **Other Taxes - Risk Management (e.g. WHT, FTT, FATCA, excise duty, stamp duties, airline passenger duty, petroleum revenue tax, green taxes, local tax)** | Informal | 1. Standardised | Agna identifies tax risks or opportunities based on staffexperience. Risk is not quantified but rather it’s considered in a qualitativebasis and then the experience of the relevant staff is used for its assessment.Risks are also discussed with management and the relevant stakeholders. Thereis scarce focus on risk, especially pertaining the fiscal dynamic of Agna. Tax advisors areinvolved when necessary, and ad hoc when problems are apparent. Tax advisorsare used only in non-usual matters, where internal staff cannot provide asolution. Agna establishes likelihood and impact of risk, primarilybased on gut feeling, but also on the use of simple methodology and techniques. | The tax risk identification process should be designed to makea clear connection between the organization's activities and the associated taxrisks. These issues should be discussed with a tax advisor on aregular basis. Establishing likelihood andimpact must be based on qualitative and quantitative methodology. Key controls shouldbe in place to ensure the stability of the applied procedures, as well as theveracity of the perceived risks. Risks should be forecasted and not onlytreated ad hoc, when they become apparent. Prevention should be the focus ofthe risk assessment and risk management procedures for the people responsiblefor financial and fiscal matters. |

   * 1. ***(Tax) Risk Management***

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   |  | ***Current State*** | ***Desired State*** |
   | **(Tax) Risk Management** | Informal | 1. Standardised |

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   | ***Result per item*** | ***Current State*** | ***Desired State*** | ***Assessments*** | ***Recommendations*** |
   | **Alignment with overall risk management framework** | Informal | 1. Managed | Agnahas a documented approach to fulfill the relevant corporate governancerequirements. Thereis an organization-wide understanding of potential risks associated with theoperations of the firm, but there is no risk-management framework to deal withissues that may happen. Inthe organization, individuals with responsibility for tax, but whose job doesnot only relate to tax, ensure that the management of tax risk is appropriate andfollows the main goals. Goalsin the company are measured in one single KPI which is defined as the totalnumber of Fines taken by the entity, a value which is optimal to be zero. Othervaluations of the efficiency of tax management are not made. | Agnashould implement a tax risk management framework that is applied appropriatelywithin the organization, and that provides for the right management and controltools. Thereshould be mechanics such as risk registers and risk reporting in place thatmake up the risk management policy of the company. These tools can be used toassess in continuity the fiscal performance and risk that the company is running. Thereshould be more encompassing KPI assessing fiscal dynamics. |
   | **Strategy & company risk appetite** | Informal | 1. Standardised | Thecompany has a view on tax risk strategy and risk appetite, but this is notextensively documented within the organization. Fiscalissues are mostly treated ad hoc in terms of the identification of tax risksand opportunities. There is no direct impact measurement, likelihood of anevent or forecasts made. There is no involvement of internal or externalrisk advisors in this respect. There is no organized planning or forecastingactivity. | Agna must implement a system where taxrisk strategy and appetite are documented, have been effectively communicatedto all stakeholders and are approved by management. Relevant activity must be organized totake place by following established procedures regarding fiscal issues. Internal or external risk advisors mustbe involved in mapping a comprehensive risk profile which can be used by theorganization as a trail to navigate risk. |
   | **Identifying key tax risks and opportunities -  likelihood and impact** | Informal | 1. Standardised | The organization identifies tax risk oropportunities based on earlier experience with unexpected events. All the assessments are done ad hoc andprevious individual experience is used to evaluate and measure risk. The tax advisor is involved at times,but in response to events, not in anticipation of events. There is no system inplace to set the likelihood of the anticipated events or the ways they shouldbe tackled with once they happen. Establishing likelihood and impact is primarilybased on experience and learning effects, but to some extent also on the use ofa simple methodology that is not enough to gauge risk potential, risk timing oractualization of fiscal risks, which may cause damages to the brand or organization. | The organization must implement asystem that imbues all the relevant staff, stakeholders and management with thesufficient knowhow to distinguish tax risks and opportunities. There must beclear criteria, qualitative and quantitative to observe tax phenomena, anddeduce their impact, risk and other impact that they may exert on the company. There has to be tax risk identificationprocess in place, that is designed to make a clear connection between the organization’sobjectives and the associated tax risks. All tax issues must be discussed withthe tax advisor on a regular basis, while a process for establishing likelihoodand impact of fiscal matters must be based on qualitative and quantitativeanalysis. |
   | **Risk reporting - process and structure** | Informal | 1. Standardised | Taxrisk reporting is done on a regular basis and through a formal process, whichis carried out by the finance department. Theprocess in itself is not clearly stated and is performed on the basis ofunwritten rules and through the application of learning effects. Usuallyindividuals who carry out fiscal processes, learn the route of the processverbally and then spend around 3 to 6 months on the job to learn it first hand. Thefinancial and fiscal processes are based on the know-how learnt on the job bydoing. Thereis a clear understanding of stakeholders needs in the tax reporting, but thereis no tangible risk reporting unless some adverse event materializes. | Thereshould be a clear process which states all the steps and procedures that needto be undertaken to properly report for fiscal issues as well as the riskassociated with these processes. Taxrisk must be properly communicated throughout the organization. Stakeholders’ requirements on risk strategyand reporting must be evaluated, categorized and handled appropriately in line withthe needs, goals and strategic alignment of the company. There should be a clear understanding and viewof risk, as well as a tangible quantification of risk. |
   | **Foreign tax risk management** | Initial | 1. Standardised | Due to the specific type of business that Agna performs there isa lot interaction with foreign tax teams as i pertains issues that may affect the company. Foreign tax is only handled at the Transfer Pricing level. | There should be a higher more developed involvement of foreign parent entities with the dynamics of fiscal risk management. |
   | **Control management (including types of controls and IT)** | Informal | 1. Standardised | Thereis a clear and defined understanding of the benefits of embedding tax controlactivities in the business operations. Controlsare in place, in a multi-step process which is not standardized but works toproduce a functioning fiscal system. This process is efficient in keeping thebusiness running, and fulfilling the one tax KPI which is not taking any fines.Even this KPI is not highly formalized due to its mono-dimensional quantitativenature. | Taxcontrol activities should be defined and documented. These activities should beconstituent parts of the operational primary and support activities. Thereshould be clear steps and procedures that govern fiscal processes within thecompany. IT solutions must be implemented to monitor andautomate the control activity. All procedures which are done by individualsdirectly should be automatic, using digital contracts, as well as programmaticcontrol and approval methods. |

   * 1. ***Monitoring/Testing***

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   |  | ***Current State*** | ***Desired State*** |
   | **Monitoring/Testing** | Standardised | 1. Managed |

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   | ***Result per item*** | ***Current State*** | ***Desired State*** | ***Assessments*** | ***Recommendations*** |
   | **Methodology** | Informal | 1. Standardised | Collection and assessment methods and techniques exist, but havenot been adopted across the organization. Stakeholder requirements are explicitly known, but theassessment of the way there are fulfilled is lacking a structure and is done adhoc. Data collection is picked up by individuals and based on previousexperience, not a formal process. While the data points needed are known and explicitly statedthere is no written formal procedure describing the route to be followed to getthe results needed. Monitoring and testing methodology is not clearly stated andnot clearly defined, especially regarding fiscal matters. | There must be a seamless and thorough integration of metricsacross all processes. Stakeholder requirements must be properly assessed andintegrated within overall definitions and goals of the organization. Automated solutions must be implemented and be fullyoperational across the organization to collect and monitor processes and to thegoals of Agna, through KPIs and financial and performance measures and ratios. There is a defined monitoring framework, along with itsrespective tools and a planned approach on information gathering techniques andmethodologies. Management must be able to evaluate performance based onagreed-upon criteria approved by the different stakeholders includingmateriality and related operational and financial forecasts. |
   | **Follow up, escalation and communication** | Standardised | 1. Optimised | There is an informal process in place regarding the follow up andescalation of monitoring and testing results. The process is based on uncoordinated monitoring and testing activity. | A formal and effective functioning process regarding thefollow up and escalation of the results of monitoring and testing activities mustbe in place and must be properly documented and communicated. All relevant KPIs must be effectively chosen and monitored. The organization must be actively monitoring and testing allsignificant KPIs and should be able to continuously improve and fine-tune its operationsand processes. |
   | **Stakeholder management and internal tax reporting** | Standardised | 1. Managed | Reporting takes place but does not follow a defined processthat is designed to take into consideration all the facets of the controllingwork. Reporting is regular and complete, but goes as far as beingcompliant with the tax authorities and doesn’t provide enough metrics ofassessment. Stakeholder requirements are known but, especially regarding tax, they are not clear and are based on only one KPI/requirement. The need for transparency is understood, but is not yet communicatedproperly throughout the organization. Disclosing issues is up to the individual's evaluation, orwhen tangible issues arise. | Reporting to stakeholders should be conducted in an agreed format and should follow a standard and regular process. The level of transparency should be determined based on stakeholders’ requirements and inline with the business and tax strategy. |

   [↑](#endnote-ref-1)