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# Human Capital Analytics

Maturity evaluation and development proposal for a case company

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The purpose of this thesis was to evaluate the status and maturity of human capital reporting and analytics in case company, Wärtsilä Corporation. Wärtsilä is a global corporation, which manufactures and services power sources and other equipment in the marine and energy markets. The industry, where Wärtsilä operates, is currently under remarkable transformation, for example due to digitalisation, and that affects also the talent and competences needed in the company. For optimising their human capital, Wärtsilä HR sees that it needs analytical information about their workforce. The target for the study was to create a development proposal for human capital analytics for the case company, based on the maturity analysis results.

This research was conducted as an action research. The material was collected from the company's existing materials, literature, recent researches and articles around the topic. The structure for the maturity evaluation was formed based on the literature review. In addition to documentation review, empiric qualitative data was gathered using interviews and a questionnaire targeted to HR professionals. Altogether 28 HR professionals covering all HR functional areas participated the study.

The results indicate that Wärtsilä has a good basis for human capital analytics, but is still at a beginner level in implementing it. Relevant HR data sources exist and basic operational HR reporting is well in place, and organisational culture supports using data and analytics in decision-making. In addition, compliance matters like access rights and authorisations, data integrity and audit procedures seem to be in good shape. However, HR as a function has no tradition in using the data actively and systematically to steer the operations, and HR organisation is lacking analytical skills and competencies. Furthermore, there is room for development in the currently-used metrics and measures, as they are mainly activity measures, but lacking performance and added-value metrics which would measure the impact of actions. Additionally, the current metrics look backwards, and there are no measures to provide predictions on future, such as on talent acquirement/management, resourcing, or organisational structures and how they will look like in the future.

The author recommends that Wärtsilä HR first clarifies the vision and purpose for human capital analytics; what Wärtsilä wants to achieve with human capital analytics pursues, and on what items and topics it should focus. There is also a need to clarify the strategy focus in reporting and analytics, as human capital analytics should be driven from Wärtsilä People strategy. The People strategy has distinct focus areas: leadership, high performance, culture and engagement, talent development, and resourcing. Human capital analytics should pro-

vide insight for these topics, help setting targets and milestones, and define necessary actions. Furthermore, the selected HR key performance indicators should have clear levels and ranges for success, and show progress in those strategic matters. It is also recommended that to gain analytical skills, the company should either recruit or build analytics competences in HR organisation.

Keywords

HR reporting, HR analytics, human capital reporting, human capital analytics, people analytics

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## 1 Introduction

The importance of human capital analytics in organisations grows rapidly. In today's competitive and swiftly changing environment, successful companies need motivated, skilled and capable employees, who are flexible in their job roles. To manage and develop the skills and capabilities of workforce, and to prepare for future challenges and opportunities, management must have the relevant data available about workforce to make decisions.

Wärtsilä HR has recognised that it needs to enhance its current HR reporting and measurement practises to better meet the workforce information needs, and to provide meaningful, actionable data that enables optimal workforce and performance management. Based on many studies, HR measurement and analytics are related to organisational performance and to HR effectiveness as a function in managing workforce (Boudreau & Lawler 2017). Wärtsilä HR wants to develop data-driven decision approaches in HR operations.

The objectives of this study are to evaluate the current state of Wärtsilä human capital reporting and analytics, and to prepare a development proposal. Evaluation consists of maturity analysis and stakeholder analysis. In addition it is evaluated if HR information (metrics, KPIs) are aligned with business strategy, and where and how information is leading to actions or results. The result of the study will be a development plan for Wärtsilä human capital analytics. Plan contains practical proposals for possible future actions, based on literature, best practises, and benchmark data.

### 1.1 Case company

Wärtsilä is a global corporation, which manufactures and services power sources and other equipment in the marine and energy markets. The core products of Wärtsilä include large combustion engines used in vessels, and power plants that run on any gaseous or liquid fuels, including biofuels. In addition, Wärtsilä provides maintenance services of both the engines and the power plants. These form Wärtsilä's three business lines: Marine Solutions, Energy Solutions and Services. (Wärtsilä, [www.wartsila.com](http://www.wartsila.com))

In 2016, Wärtsilä's net sales totalled 4 801 M€. Of the net sales, 46% were of Services, 35% of Marine solutions and 20% of Energy Solutions. The company has operations in over 200 locations in more than 70 countries around the world. Wärtsilä employs 18 000 professionals with very diverse skills, backgrounds and ambitions. Wärtsilä is headquartered in Finland.

#### 1.1.1 Business units

Marine Solutions offering consists of ship machinery, and propulsion and manoeuvring solutions. Wärtsilä supplies engines and generating sets, reduction gears, propulsion equipment, control systems and sealing solutions for all types of vessels and offshore applications. The Marine Solutions business segments consist of ship builders, ship owners and ship operators. Marine Solutions enhances the business of its marine and oil & gas industry customers by providing innovative products and integrated solutions that are safe, environmentally sustainable, efficient, flexible, and economically sound. Marine Solutions employed approximately 6 000 persons in 2016.

Energy Solutions offers a broad range of environmentally sound solutions. Offering includes power plants, energy storage and integration solutions, and LNG terminals and distribution systems. The power plants are based on multiple internal combustion engines and can run on any gaseous or liquid fuels, including biofuels. In the Energy Solutions business, the customer groups are divided into industries, utilities and independent power producers. In the end of 2016, Energy Solutions employed around 900 employees.

Services supports its customers throughout the lifecycle of their installations by optimising efficiency and performance. The portfolio of services varies from spare parts to complete operational, maintenance and optimisation services. In parallel with main service operations, Wärtsilä has launched new services that support customers' business operations, such as predictive and condition based maintenance and training. In the Services business, the segment consists mainly of Wärtsilä's installed engine base. The personnel count in Services was approximately 10 500 employees in 2016.

In addition to three business lines, around 500 employees work in global business support units, e.g. in Legal, Finance, Indirect Purchasing, Communications and Human Resources.

### 1.1.2 Strategy

Wärtsilä considers itself as a global leader in advanced technologies and complete lifecycle solutions for the marine and energy markets. Objective is to leverage project management and engineering competences to achieve growth by offering customers new and innovative solutions. Increasing environmental awareness and changing energy needs are affecting Wärtsilä's customers' operations. Therefore, Wärtsilä aims to maximise the environmental and economic performance of the vessels and power plants of its customers by emphasising sustainable innovation and total efficiency. Digital transformation will also provide increased customer value and optimised performance.

Wärtsilä has strong emphasis on product and solution innovation, particularly in the areas of efficiency improvement, fuel flexibility, total cost of ownership, and the reduction of environmental impact. Investments in R&D and focus on digitalisation aim to secure Wärtsilä's position at the market. Wärtsilä focuses on research and development, and used 131 M€ to R&D investments in 2016, representing 2.7 % of its net sales. Wärtsilä has long-term co-operation with many research institutes and partners, and e.g. on 2015 it made 56 patents for new inventions.

## 1.2 HR Function

Wärtsilä Human Resources (HR) is one of the global business support units, along with e.g. Finance, Communications and Information Management. Wärtsilä HR consists of approximately 250 professionals, that represent more than 50 different nationalities.

HR function develops, implements and deploys processes, systems and tools which will help Wärtsilä to attract, develop and retain the best talent in the company. In practise, Wärtsilä HR processes include e.g. recruiting and staffing, benefits, compensation, employee relations, HR compliance, organisational design, training and development, human resource information systems (HRIS) and payroll operations.

### 1.2.1 HR operations

Targets for Wärtsilä HR operations are

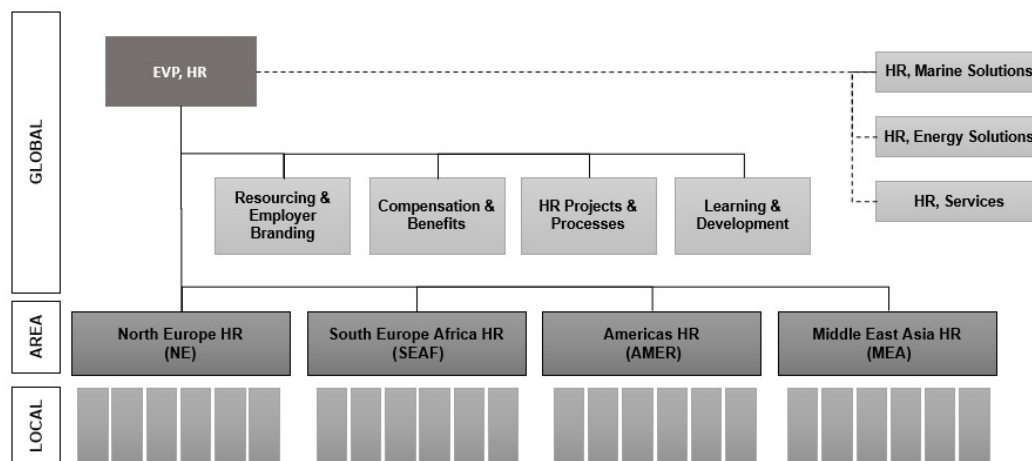
- developing Wärtsilä's organisation and competencies to meet the business needs

- strengthening leadership and management competencies in the organisation
- strengthening performance management and development
- ensuring that the right people are in the right places
- promoting company culture and way of working
- gaining true employee engagement through a culture of open communication, integrity and innovation

Main actions for reaching these targets include driving job rotation/career plans cross businesses, focusing on leadership development and strong performance management process, and developing the global HR function which provides consistent, quality HR service to all Wärtsilä employees throughout the employment lifecycle.

### 1.2.2 Roles and responsibility areas

Wärtsilä HR organisation is divided to three tiers: global, area and local.



Kuvio 1. Wärtsilä HR organisation structure

Global HR consists of four subject matter units: Resourcing, Learning & Development, Compensation & Benefits and Projects & Processes. Subject matter units develop and execute group-wide HR policies, processes and practises, e.g. recruiting and employer branding, master data maintenance, merit reviews and leadership development programs. In addition, they develop and maintain common HR information and reporting systems.

Area HR administers and applies global rules and processes in respective geographical area, and ensures that uniform policies are consistently in use across countries in the area. Area HR also gathers feedback and development proposals regarding global policies and practises from countries and delivers it to global process owners.

Local HR manages employment lifecycle and provides support for employees and managers on country level. Local HR also implements locally global resource management and compensation & benefits processes, and ensures executing compliance rules at country and company level. Country level HR's report to respective Area HR.

In addition to these tiers, the business line HR units (Marine, Energy and Services) report to global HR in matrix. Business line HR's concentrate on business-specific issues and development items, like business-specific competence and talent management.

Regarding corporate management, Area HR directors belong to their areas management teams, and Business HR directors belong to business line management teams. EVP, HR belongs to corporate Board of Management.

### 1.2.3 People Strategy

The purpose of Wärtsilä's People Strategy, as an integral part of group strategy, is to support the company businesses and to ensure the successful implementation of their strategies. This is achieved by developing the company's organisation and competencies to meet both the current and future business needs. Wärtsilä strategy states as following:

Market driven investments in R&D and focus on digitalisation create a strong foundation for securing and strengthening Wärtsilä's position at the forefront of market innovation. This innovative culture, together with constant emphasis on safety, diversity, and high ethical standards, attract skilled and committed people and provides the basis for a high performing organisation. Entrepreneurial drive, customer focus, and passion for doing right not only create new opportunities and environmentally sustainable solutions, but also bring value to all stakeholders.

People Strategy aims to ensure that the businesses have the required resources, and skilled and motivated people at their disposal. This involves the implementation of changes within the organisation, a continuous focus on competence development and performance excellence, with quality in the setting of targets, proper and regular feedback, the evaluation of overall performance, and recognition of outstanding performance.

The key focus areas of the People Strategy are further development of leadership and a leadership culture, as well as an emphasis on high performance and operational excellence throughout the organisation. Strengthening accountability and ownership is encouraged by promoting employee engagement through a culture of open communication, integrity, and innovation.

### 1.3 Topic selection

I work in the case company HR organisation and am closely involved in developing HR information systems, which provide basis for human capital reporting and analytics. I chose this topic since I have been involved in providing HR reporting and developing HR metrics in different organisations for a long time during my career, and I have genuine interest to this area. I personally think that HR could produce much more meaningful and insightful data for the business than it does nowadays, in most companies.

This topic provides me opportunity not only to understand what are the elements for successful analytics, but also to evaluate and explore what are the elements that Wärtsilä as a company should develop, and moreover what I personally could develop in my current position, to benefit the human capital analytics in the company. It is rewarding to be able to connect thesis findings directly to reality and daily operations.

## 2 Research methodology

Case company's HR function is interested in understanding where it stands in analytics continuum and what are the necessary actions for proceeding in the analytics path. The objective of this study is to evaluate the current state of Wärtsilä HR reporting and analytics. Result will be a development plan for Wärtsilä HR Analytics.

Research questions in this thesis are as follows:

- What is the current state of HR analytics in case company?
- What are the main development items for progressing in analytics?

### 2.1 Research method

Selected research method is action research. Action research is time-limited development and research program, where target is to plan, implement and try out new ways

and models of working (Heikkinen 2006, 17). Action research aims to affect and change the behaviour of organisation. In the beginning, the current state is evaluated and reflected against information from literature review and earlier research results. Based on current state analysis findings, researcher creates action program, which targets to implement change in current state. During research period, actions are executed and their impact is evaluated. Finally, research tries to establish the new model of behaviour to be permanent in the organisation. (Ojasalo & Moilanen & Ritalahti 2009, 58.)

Action research aims to solve some practical problem which organisation has faced in daily operations, or improve and develop some current practice or model (Metsämuuronen 2008, 29). According to Cohen and Manion (1995, in Metsämuuronen 2008, 31-32), action research proceeds in following phases:

1. Recognising, evaluating and formulating a problem in current practices
2. Discussion between interest groups
3. Exploring literature regarding interest area
4. Modifying and re-formulating problem
5. Planning the research
6. Planning evaluation
7. Launching the action program
8. Interpretation and evaluation of results

When usually a research targets to explain a phenomenon, and create theoretic information, action research targets instead to produce practical information and benefits. Researcher participates in operations in the target organisation, and strives for achieving change with his/her actions. In action research, researcher is not objective and neutral observer, but an active player. (Heikkinen 2006, 19.)

The fact that researcher participates actively in operations has effects on how researcher should treat and analyse research material. Traditionally, researcher collects and analyses material from outsider perspective and makes conclusions based on objective observations, but in action research researcher's own experiences, thoughts and findings are essential part of research material. (Ojasalo et al. 2009, 60.)

Understanding and comprehension of the issue evolves along with the research process. This process of gradually evolving understanding and construction is called hermeneutic

circle. However, this cyclic process does not have an end: once new practice is established, reality is changed and needs to be observed and evaluated again, and new better ways of working planned. Theoretically, change never ends, but as research period usually has time limitations, researcher must delimit the change to some justified phase or time and report results accordingly. (Heikkinen 2006, 28-29.)

It has been questioned if a thesis work for university of applied sciences can be considered as research. Student may use research methods and manner in thesis, but performing action research requires managing methodology and having expertise which student is many times only just learning. Also, the extent and time scope of thesis work does not support principles of action research. Action research is time-consuming, because target organisation is often observed very long time, even for several years. Researcher usually also should get acquainted to target group for a long time, and learn target organisation's operating models and mindset which takes time. (Vilkkä 2006, 76-77.)

Thesis worker usually develops professional activities and prepares a report about those development actions. But for to be called an action research, report should include scientific and sociologic discussion, which is required by action research methodology. Usually report is more a display of development actions and demonstration of knowledge and skills which individual student has achieved. Thesis may not have scientific impressiveness, even though it affected target organisation operations. (Vilkkä 2006, 76.) Action research as method has also been criticised for that targets and methods are often defined too vaguely, which might make other researchers difficult to utilise results (Metsämuuronen 2008, 32).

## 2.2 Data collection

Empiric data collection to this research is majorly done by interviewing stakeholders on the topic. The chosen approach to interviewing is interview guide approach. This approach involves outlining beforehand the topics that are to be explored with each of the participants, although the actual wording of the questions or the order of questions is not predetermined. An interview guide is a list of subject matters or questions that are to be handled during the interview, however it allows the interviewer to adapt the sequence and wording of questions to each recipient during the interview. The interview guide

serves in the interview context as a checklist ensuring that all relevant topics are handled, and same information is obtained from all participants. (Patton 2002, 280-283.)

The interview guide is a framework that can be built less or more detailed, depending on how well the interviewer can specify the topics and important matters to be discussed beforehand, or how important it is seen to ask the questions in same order and wording from all participants. However, interviewer is not expected to go into new subjects that are not covered within the framework of the interview guide. Interview guide is a prepared document that guides interviewer through the interview. It may also be shared in full or in part with the interviewee beforehand. (Patton 2002, 283-284).

The advantage of interview guide approach is that it helps the interviewer to decide how to best use the limited interview time. It helps gathering information in systematic and comprehensive way, and keeps the interview focused, however allowing individual experiences to emerge. (Patton 2002, 283.) Weakness of the method is that as framework is built by the researcher in advance, important topics may be unintentionally omitted from the interview guide. Also, significant variation in wording and sequencing of questions can lead to substantially different perspectives and responses from respondents. (Patton 2002, 288.)

Interview should start by providing the respondent the basic information about the overall purpose of the interview, including what will be asked, who is the information for, and how data will be handled and used, including confidentiality aspects. It is suggested to begin with some noncontroversial, straightforward questions about current activities, behaviours or experiences. Such questions do not require interpretation from respondent and are quite easy to answer, thus encouraging the respondent to settle on the subject and talk descriptively. (Patton 2002, 294; 328)

Once some activity or experience is handled and described, interview may progress to questions about opinions, feelings and interpretations, as they are likely to be more accurate once respondent has verbally recaptured the experience. It is also recommended to start with questions that handle the present rather than past or future, as past- or future-oriented questions tend to be more difficult to answer and require more orientation from respondent. After asking about the present it is easier to use that as a baseline and continue with questions about the same in past or future. (Patton 2002, 294.)

### 3 Human capital analytics

Human resources, meaning employees and how they are utilised, managed and organised, is increasingly recognised as a critical factor to strategic success and competitive advantage of an organisation. Human resources are called with several terms; human capital, people, labour, workforce, intellectual capital, talent, to name a few. (Boudreau & Ramsted 2007, 4.)

The term human capital was first introduced by an economist Theodore Schultz in 1961. The theory of human capital has been further developed by economists Elliot (1991), Bontis (1999) and Davenport (1999). (Baron & Armstrong 2007, 8.) Human capital as a concept means the added value people provide to organisations. Human capital, i.e. the know-how, skills, competencies, abilities, creativeness and capacity of employees, is one element of intangible assets to a company, similarly as brand, customer relations, copyrights or company image. (Baron & Armstrong 2007, 5.)

Human capital theory focuses on three topics: resourcing, HR development and rewarding strategies and practises. Resourcing strategies focus on matching human capital resources to the strategic and operational need of an organisation. Resourcing also aims to ensure that resources are utilised effectively and efficiently. Resourcing strategy targets to defining future requirements for human capital, identifying opportunities for more effective utilisation, and predicting how constraints in human capital may affect the business plans if no actions are taken. Examples of such constraints are problems in recruiting and retaining employees, skill shortages, low productivity, or poor employee relations and commitment. (Baron & Armstrong 2007, 15-16.)

HR development strategies define knowledge, skills and competence requirements, and address the issues in developing the capabilities of teams and individuals. HR development strategies aim to attracting and retaining human capital, as well as developing it, and encouraging individual and organisational learning. (Baron & Armstrong 2007, 16.)

Rewarding strategies base on concept of individual market worth of an employee. Individuals have their own value in job markets, and the value is increased when gaining more expertise and competences, either by training, development or experience, invested either by employee or employer. Investment in individuals adds to their value, and individuals expect a return on their own investment on their skills and competences

- increased value of the individual should be rewarded. Rewarding strategies focus on the use of skill-based or competency-based rewarding models, as well as non-financial recognition schemes and performance management models. (Baron & Armstrong 2007, 16-17.)

Human capital theory generates following practical questions for organisations:

- What skills do we have?
- What skills we need now and in the future?
- How do we attract, retain and develop these skills?
- How we can and how we should develop learning culture and environment in organisation?
- How can we use both explicit and tacit knowledge in organisation most effectively?

(Baron & Armstrong 2007, 18.)

Organisational effectiveness depends on how well human capital is used, developed, captured and exchanged (Baron & Armstrong 2007, 7).

The value of human capital is inherently dependent upon its potential to contribute to the competitive advantage or core competence of the firm (Lepak & Snell 1999, in Baron & Armstrong 2007, 11).

There are several trends that affect the human capital in a company. Digitisation, labour shortages, company growth through acquisitions, simultaneous expansion and downsizing, workforce demographics changes, constant competition and change, and globalisation are trends that are affecting most companies. Business decisions need to be made more quickly than before, and those decisions many times depend on organisation and talent. Furthermore, the employment relationship has an immense pressure to adapt to those trends, decisions and changes. (Boudreau & Ramsted 2007, 4.) Businesses today are based more and more on knowledge, innovations and human competences. Companies that don't put effort on analysing its human capital are likely to be disrupted by competitors that do, and those other companies might be able to recruit their competitors' people and improve their sales, engagement and culture.

Measuring the value of human capital as intangible asset is important for organisations for various reasons:

- Human capital forms a key element in company's market worth

- People add value in organisation, and it is important to assess this value for improving HR processes and practises
- Focus on measurement and analysis raises attention to what is needed for making the best use of organisation's human capital
- Measurement helps monitoring how strategic HR targets are achieved

(Baron & Armstrong 2007, 33-34.)

The recognised importance of human capital has led to developing methods of measuring the value of that asset. Measurement has several different approaches. Human resource or human asset accounting aims to provide input for managerial and financial decisions by quantifying the economic value of people to the organisation. Accounting models attempt to calculate the contribution of human resources to organisation by capitalising pay expenditures, meaning that discounted values of salary costs are included in the asset section of the balance sheet instead of being expense. However, accounting models have been criticised of suffering uncertainty and subjectivity, and that measures are not sound as they cannot be reliably audited. It is also questioned whether people can be considered as financial assets as employees are not owned by the company. (Baron & Armstrong 2007, 12-13.)

Measuring value of human resources can also be done by assessing the value, impact or contribution of HR policies and practises to business success. This approach aims to measure how efficiently organisation is using its human capital, rather than what is the value of human capital. (Baron & Armstrong 2007, 13.)

In this approach, fundamental objectives for human capital analytics are to determine the impact of human capital on the business and shareholder value, demonstrate that HR policies and practises produce monetary value, for example ROI, and provide diagnostics and predictive data which will help to develop practises and strategies further, for improving the effectiveness of human capital management. (Baron & Armstrong 2007, 21-22.)

Business driven approach to human capital measurement starts from view that whatever is measured or investigated should be of strategic value to the organisation. Business driven approach starts by identifying key questions, such as:

- What is the focus of business strategy in 3 to 12 months and beyond?
- What are the key people issues driving or hindering strategic agenda?

- For each of those issues, what would be the target state?
- What information we need to show that target state is achieved?
- How often it is needed, how detailed, how accurate, how it should drive action?
- Where will the information come from?
- How will the information be analysed and presented?
- Who should and will drive this?

(Baron & Armstrong 2007, 64.)

Human capital measurement comprises of numbers or quantities that present human resources in an organisation, derived from human capital data. Measurement also presents selected aspects or scales of people behaviour and people management activities. Examples of common measures are demographic figures about workforce structure (like size, type, age etc.), absence or sickness rates, number of newcomers and leavers, or amount of training days held. Human capital measurement is often important for complying with legal or regulatory requirements, however mandatory measures are many times not informative enough for really understanding and analysing human capital. For example, measure can show how many employees left the company, but does not interpret reasons why employees left. (Baron & Armstrong 2007, 31-32.)

Human capital data can be structured or unstructured. So far, more focus has been on structured data like revenues, costs, quantities and time cycles. However, majority of available data is nowadays unstructured and non-numeric, like images, text or audio. Furthermore, as social networking continues to grow, the portion of unstructured data will expand. In practise, structured and unstructured data will merge into sort of hybrid data, which will make the analytic process much more complicated. (Fitz-Enz & Mattox 2014, 5.)

Measures can be classified to three categories (Boudreau & Lawler 2017; Kearns 2005; in Baron & Armstrong 2007, 62):

- Activity measures:
  - measure efficiency of operations
  - depict the level or amount of activity, without assessing quality or outcome of the activity
  - examples: sickness days or number of training days per employee
- Performance measures
  - measure effectiveness

- assess outcomes of activities
- examples: improvement in performance, contribution, profitability, productivity
- Added value measures
  - measure impact
  - assess the extent of business or strategic value of the HR activities
  - examples: return on capital for HR investments or increase of sales

Added value and performance measures depict the outcomes, which make them more valuable than activity measures, but often activity measures are the only ones available. (Baron & Armstrong 2007, 62.) However, most useful combination is a mix of all three types. They complement each other. and provide together better understanding on how HR investments affect organisational performance. (Boudreau & Lawler 2017.)

Some of the most valuable performance metrics can be selected as key performance indicators. Key performance indicator (KPI) is a strategically aligned metric. It represents a strategic objective, and measures performance against a goal. KPI's have several distinguishing features:

- Strategy: represents a strategic objective
- Targets: measures performance against specific targets
- Ranges: targets have a range for performance
- Time frames: targets are tied to time frames in which they must be accomplished
- Benchmarks: targets are measured against a baseline or a benchmark

A distinction can be made between KPI's that are "outcomes" and those that are "drivers". The former measure the output of past activity, whereas latter measure activities that have significant impact on outcome KPI's. (Sharma 2014, 154-155.)

### 3.1 Analytics framework

Analytics is defined as the scientific process of transforming data into insight for making better decisions. Human capital analytics or people analytics is the use of measurement and analysis techniques to understand, improve, and optimise the people side of business. Human capital analytics is not just about measurement, but purposeful measurement. (Fitz-Enz & Mattox 2014, 3.)

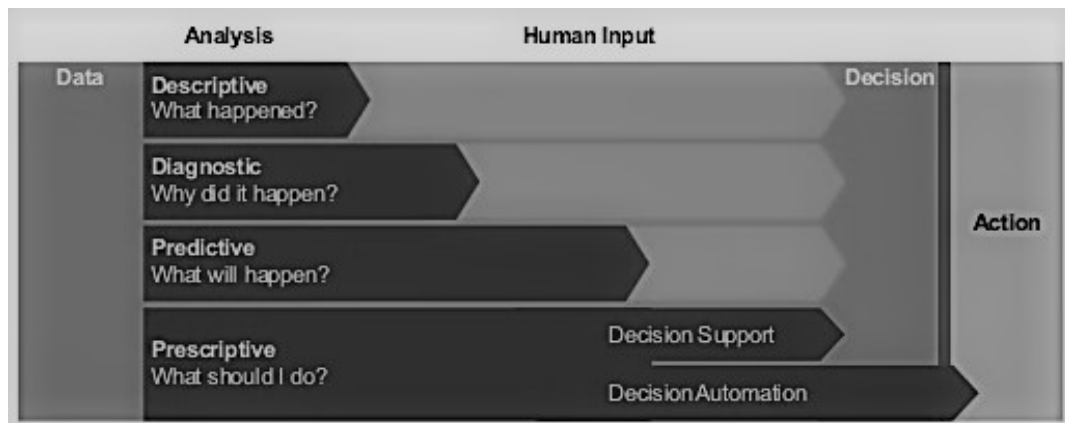
Analytics can be defined as “process of developing actionable decisions or recommendations for actions based upon insights generated from historical data” (Sharma et al. 2014, 43). Human capital analytics is primarily a communications instrument. It gathers data from various sources, such as surveys, documentation, and operations, and forms a coherent, actionable picture of current conditions and likely futures regarding organisation’s human capital and its efficient use. This is an evidence-based approach to making better decisions. (Fitz-Enz & Mattox 2014, 3.)

The purpose of analytics is to try to uncover hidden value from a bulk of data. The value comes in economic and financial form. Economic data contains intangible, non-monetary items or processes which are affecting resources, like for example employee satisfaction, employer reputation or community relations. Economic value should turn eventually as financial, tangible value, as customers will buy company products or services, investors will purchase company shares and skilled employees with high competences seek employment from company. (Fitz-Enz & Mattox 2014, 4.)

Commonly, the continuum of analytics capabilities is seen to happen in four stages:

- Descriptive – tells what happened
- Diagnostic – tells why it happened
- Predictive – tells what will happen
- Prescriptive – tells what to do next

These four stages of continuum of analytics are illustrated in below picture.



Kuvio 2. Analytics Capabilities Framework (Gartner 2013)

In the continuum focus shifts from past to future, and aims to better predict and be prepared for future (Gartner 2013). Analytics is an evolution from transactional processing and reporting to forecasting and predictive modelling. Transactional reports list and sum operative actions, like how many employees are employed by the company or how many persons have attended a training on a specific period. Transactional reporting is focused on routine tasks in ongoing business. In contrast, analytics is usually based on multiple data sources, and intention is to delve into data for finding information about the business, which can be used on making tactical or operational decision-making. (Sharda et al. 2014, 39.)

### 3.1.1 Descriptive reporting

Descriptive HR reporting provides basic transactional information about human capital in an organisation. Descriptive reporting is usually standard, operational reporting, and answers to questions “what happened” and “how often”. Basic examples of such descriptive metrics are the number of employees, HR expenses per employee, or sick leave percentages.

Basic transactional reporting has two aspects: external reporting to stakeholders and internal reporting for managers and leadership teams for decision-making. Whereas external reporting just records the numbers, internal reporting tries to extend the view to practical implications of the data and to necessary future actions. (Baron & Armstrong 2007, 34-35.)

External HR reporting is most often provided in a form of annual reports. The purpose of external reporting is to provide information about organisations sustainable performance for stakeholders, like investors and financial analysts. Annual reports are often in narrative format, containing descriptions about the human resources available in the company and about its human resources policies and practises. (Baron & Armstrong 2007, 88.)

One area of external reporting where importance is rapidly growing is corporate social responsibility (CSR) data. CSR data is increasingly demanded by customers, who require that business is done in ethical and sustainable way. In many companies, information about human capital is incorporated as part of CSR reporting. Good performance in CSR matters may result to increased sales and improved employer and company image. (Baron & Armstrong 2007, 47-48.)

The most common practise of reporting CSR matters is according to the guidelines provided by Global Reporting Initiative (GRI). GRI is an independent international organisation that has developed sustainability reporting for more than 20 years. GRI's Sustainability Reporting Standards are widely adopted globally as a framework in CSR reporting. The GRI standards provide a modular, interrelated structure, and represent the global best practice for reporting on a range of economic, environmental and social impacts. (GRI, [globalreporting.org](http://globalreporting.org))

Internal reporting is the most common form of human capital reporting. The main target of internal reporting is to provide good-quality information for decision making and improving business results, and to increase ability to recognise problems and act on them on timely manner. In addition, target is to gain recognition to HR function as a relevant source of information, and demonstrate the effectiveness of HR policies and practises. (Baron & Armstrong 2007, 82.)

Internal reporting is often in form of basic list or pivot reports, providing information for line managers. However, this information loses its importance unless it is credible and accurate, and it is presented in such form that manager understands the meaning of the information and is guided of necessary actions that should be taken based upon it. Information must be accompanied with proper explanations and effective analysis how it affects to organisational performance. Information will make change only if the stakeholders trust it, value it, and allow it to guide their actions. (Baron & Armstrong 2007, 83.)

### 3.1.2 Diagnostic reporting

Diagnostic HR metrics are mainly efficiency metrics, like employee turnover rate, position time-to-fill, engagement survey results and cost of hire. The primary focus in diagnostics is on cost reduction and process improvement. (Fitz-Enz & Mattox 2014, 3.)

Diagnostic HR measures reveal and describe current and historical data patterns and relationships. They answer question "why this happened". This is the foundation of progress in analytics continuum. Diagnostic reporting includes, for example, periodic reports, dashboards and scorecards, workforce segmentation, and data mining for basic patterns. (Fitz-Enz & Mattox 2014, 3.)

Diagnostic reporting refers to knowing what is happening in the organisation and understanding trends and causes of occurrences. This involves availability of all relevant data and consolidation of data sources, in a form that enables analysis. One important factor in diagnostic analytics is data visualisation, which helps to highlight the important insights based on information. (Sharma et al. 2014, 44.)

### 3.1.3 Predictive analysis

Predictive analytics aims to forecast and predict what is likely to happen in the future. This determination uses various advanced techniques such as statistical analysis, classification or clustering algorithms, decision tree models, and neural networks for predicting e.g. employee or organisational behaviour. Predictive analysis answers to question “what will happen if this trend continues”. (Sharma et al. 2014, 45.)

Predictive analysis covers various techniques (statistics, modelling, data mining) that use current and historical facts to make predictions. Predictive analysis concerns probabilities and potential impacts. It involves, for example, models used to increase the probability of selecting the right people to hire, train, and promote, or to use the information to understand why high-performing people are leaving the organisation. (Fitz-Enz & Mattox 2014, 3.)

### 3.1.4 Prescriptive analysis

Prescriptive analytics targets to recognise what is going on as well as the likely forecast, and to provide a decision or a recommendation for a specific action to achieve the best performance possible. The recommendation can be a simple yes/no to a specific problem, some specific amount or count like price per hour or optimal group size, or a set of specific actions in a plan. This type of analytics is also called normative analytics. (Sharma 2014, 47.) Predictive analysis answers to questions like “what is most likely to happen” or “what should we do”.

Prescriptive analytics goes beyond forecasting, and outlines the decision options and the optimisation of the workforce. It is used to analyse complex data for predicting outcomes, providing alternative decision options, and showing alternative business impacts. It involves, for example, models used to understand how alternative learning investments

impact the business results, how to use people data to predict future business performance, or to create predictive models for retention. (Fitz-Enz & Mattox 2014, 3.)

### 3.1.5 Evolution of analytics

Progressing in analytics path starts from simple transactional reporting of HR metrics and benchmarks, and continues through statistical analysis to prediction - and eventually to business intelligence and prescriptive modelling of business practices. As evolution proceeds from descriptive to prescriptive, the added value grows exponentially. (Fitz-Enz & Mattox 2014, 3.)

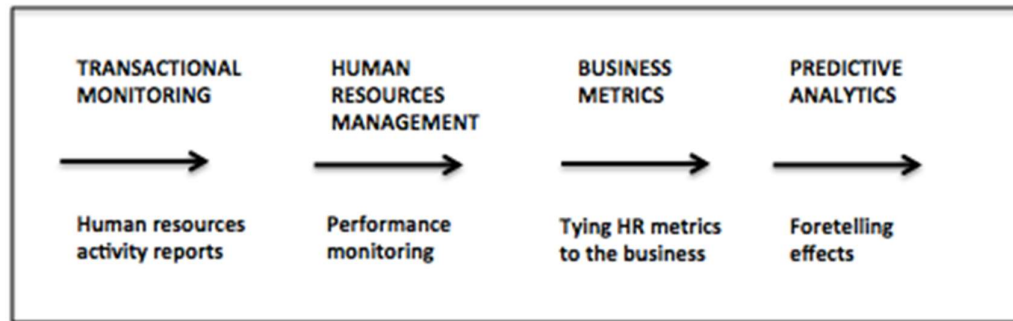
Whereas reporting looks backwards and shows the results of the past, analytics tries to understand trends, dependencies and patterns, and forecast the future. In HR context, the difference between reporting and analytics can be seen e.g. following items:

- Reporting counts "heads", whereas analytics tries to show where those "heads" can be organised and utilised most efficiently.
- Reporting indicates employee turnover rate, but analytics shows what skills are lost and whether retaining those is essential or not.
- Reporting shows engagement scores, but analytics digs out which aspects of employee satisfaction correlate to high performance and what can be done to improve them.

(Hoffman et al 2012, 12.)

Mature and developed analytics requires collecting information from several different sources, and usually also building data warehouses for combining the data. Information is generally collected from HR information systems and ERPs, but also from finance, sales and production systems. Data is integrated using queries and reports, and further processed with analytic methods in order to understand outcomes and forecast opportunities. (Fitz-Enz 2010, 188).

Human capital analytics builds robust operational and strategic models by adding reliable information about human capital to operational, financial and market data. Analytics can be used for predicting how the organisations will look like in the future, how the costs will develop, and what actions and investments are required for obtaining future state. (Hoffman et al. 2012, 3.)



Kuvio 3. Evolution of human capital metrics (Fitz-Enz 2010, 9)

One evolution stage must be completed before moving successfully to another. Organisations have different starting points to the path, as they may have different information and capabilities available. Every organisation is unique, with its own set of circumstances and objectives. The metrics that count for organisation will therefore differ depending on context. (Baron & Armstrong 2007, 83.)

It is to be noted that information provided by analytics is meaningless unless it leads to actions. Therefore, when developing measures and metrics it is essential to keep in mind following questions:

- Why this needs to be done?
- Where does this lead us?
- What kind of action should and could flow from this?
- Who will take the action?
- How do we ensure that action will take place?

(Baron & Armstrong 2007, 37-38.)

### 3.2 Challenges and pitfalls

The challenge in human capital analytics is many times not the lack of data but the complexity of analysing it. In most companies, there is plenty of data available: from recruitment, employment lifecycle, performance management, payroll, employee engagement surveys to mention. In addition, suitable data is existing in other functions like finance and operations. But the interpretation of what data means is the challenge. (Baron & Armstrong 2007, 46.)

Progressing on a human capital analytics path is not an easy journey, and there are several pitfalls which can lead to failure. In the following are the most common issues.

### 3.2.1 Not answering the right questions - or any questions

Human capital analytics has often an “inside-out” HR perspective and is focused on proving that HR as a function is “doing things right”. Typical examples of HR data presentations are for example proving that HR uses the right recruitment assessments, showing what the return on investment of the training programs is, or how efficient is the induction process. The information produced is from narrow HR focus, “inside-out” perspective. (Rasmussen & Ulrich 2015, 238.)

HR also often focuses on measuring the process rather than measuring the results. In addition, many common HR metrics measure HR functions own activity and not the impact. Very common tendency in HR function is to indicate costs, time periods, and amounts, but without describing their effects. Instead of addressing what is happening with the human resources function, HR should demonstrate what value HR produces for the company. For each presented metrics HR should ask itself: What difference does this make? What is the outcome? What management decisions and actions can be based on this information? (Fitz-Enz 2010, 184.)

HR analytics should apply an “outside-in” perspective, where questions are related to business outcomes. It would create much more value if HR analytics focused on showing that HR “does the right things”. Such business questions could be e.g. how does HR help transform the organisation’s culture so that company can better deal with market movement, or how can company build critical technical talent faster, cheaper and better for distinguishing from the competition. (Rasmussen & Ulrich 2015, 238.)

Mathematician John W. Tukey stated well in 1962 (in Rasmussen & Ulrich 2015, 236):

"Far better an approximate answer to the right question, which is often vague, than an exact answer to the wrong question, which can always be made precise."

### 3.2.2 Becoming data fetish

One common pitfall is that HR has so much data that it is completely overwhelming. Managers are loaded down with different HR reports and metrics. Data can generate

value, but when it is overdosed, it can also create confusion and miscommunication. Also, many times *data* are confused with *information*. Simply collecting a mass of data and showing lots of metrics does not have informative value, instead it can lead to frustration and poor decisions. Data or metrics alone do not help management make effective decisions. (Fitz-Enz 2010, 183.)

Some also think that more data or “Big Data” is always better, but having more data does not necessarily equal to useful data. Analytics does not mean “bigger data”, instead it means asking the right questions, having the right information, and that the results and effects are properly interpreted. Used metrics should answer relevant business questions rather than just be a data dump. HR should concentrate on collecting and reporting only important business information, and doing so with care. (Fitz-Enz 2010, 183; Pease 2015, 61; Rasmussen & Ulrich 2015, 237 - 238.)

### 3.2.3 Stagnation of metrics

The most traditional and mostly noted issue is that most HR measurements are based on the past (Fitz-Enz 2010, 21). Most HR dashboards work this way: they show a great variety of separate HR metrics at any given point of time, in one convenient, accessible place. But what they don't tell is that how these numerous metrics change or relate, or is there a need to act on any of them. Dashboards as such are not bad or worthless, quite the contrary: dashboards, scorecards and similar tools are important, and can offer a snapshot of the organisation at any given time. But information about the past is important only if it helps us understand the present and enables us to make decisions about the future. (Pease, G. 2015, 62.)

In analysing human capital, not only what is being measured but how it is measured can make a huge difference in the ultimate value of the metric. For example, in performance management, most often manager gives a score on how employee performed on certain past period. Therefore, gathered performance data via manager evaluation is static and linear; it only captures what happened past period. This is of little value to an organisation. However, if another dimension was added to these evaluations, it would greatly enhance usefulness of performance data. If a manager would add a rating for employee potential to the performance score, that would form a unified two-axis metric and multiply the value of the metric in HR analytics. Metric would tell about organisations potential,

and an employee with low performance but high potential can be remediated differently than an employee with high performance but low potential. (Robinson 2017.)

### 3.3 Evaluating maturity of analytics

There have been many maturity models developed to help organisations evaluate and understand the state of its analytics. Here I present two models, one created by The Data Warehousing Institute (DTWI, dtwi.org) and second created by The Institute for Operations Research and the Management Sciences (INFORMS, informs.org).

The Data Warehousing Institute Model (TDWI) provides a framework for companies to understand where they are, where they are coming from and where they should head with their analytics deployments. Model also aims to provide guidance for those companies that are in their early stages adapting analytics processes, introducing best practises used by companies that are more mature in their deployment. (Halper & Stodder 2014, 3.)

The DTWI Analytics Maturity Model consists of 35 questions in five different categories. These categories form the main dimensions of the model:

- Organisation
- Infrastructure
- Data management
- Analytics
- Governance

(Halper & Stodder 2014, 4.)

Organisation dimension describes to what extent do the organisational strategy, structure, culture, skills, leadership and funding support use and development of analytics. It also describes how widespread use of analytics is in the organisation and decision-making. Infrastructure dimension presents to what extent the infrastructure supports the deployment of analytics, and how coherent and advanced architecture and used technologies are in terms of analytics initiatives. Data management dimension considers data management, quality, processing and integrations, as well as access issues. This dimension also evaluates the variety, velocity and volume of data used in analytics. Analytics dimension describes the level of advancement in company's use of analytics, including kinds of analytics utilised, methods of delivering analytics to organisation and depth of

analytics culture. Governance dimension characterises how coherent is the company's data governance strategy. (Halper & Stodder 2014, 4.)

Another maturity analysis model to present is developed by INFORMS. INFORMS is a international professional society of more than 12 000 research and analytics professionals and students, who operate in operations research and analytics field. INFORMS promotes best practices in operations research, management science and analytics. (informs.org)

To foster analytical practises, INFORMS has developed an Analytics Maturity Model (AMM) scorecard which allows analytical functionalities to be introduced to companies and organisations that lack analytical capability. It also enables those already involved in analytics to evaluate their level of effectiveness (i.e. beginning, developing, advanced) and helps to plan improvements to analytics function. (informs.org)

The scorecard is based on twelve questions that show the maturity of organisation's analytics. The questions are grouped into three sections:

- Organisational — whether the organisation has practices and culture to make effective use of the analysis possible
- Analytics Capability — does organisation have the methods, models, and services needed to perform analytics
- Data & Infrastructure — are data sufficiently integrated and infrastructure existing to support analytics (informs.org)

The INFORMS Analytics Maturity Model is a self-assessment that analyses the three critical organisational themes mentioned above. A summary page for each theme tells the degree of maturity for each factor, explains in detail the degree of maturity, and provides charts that visualise the maturity of the organisation. The summary also provides focus areas for benchmarking capabilities and identifies specific actions the organisation can take to improve analytical maturity. (informs.org)

### 3.4 Current state of human capital analytics

The more global and competitive business becomes, the more companies need forecasting, predictability, and advanced modelling. Some rare companies have already moved from traditional back-office HR data warehouses used to calculate headcounts to

advanced analytics and reporting dashboards, and even further to predictive models, but that is not very common yet. (Bersin 2016, 49.)

Although the idea of creating predictive models is becoming more widespread within HR, still most of the companies are on lower levels in analytics continuum, and focus on basic operational reporting, as seen in figure below; percentages on the right representing companies on that level.



Kuvio 4. Maturity of people analytics in organisations (Bersin 2016, 51)

Even 71% of companies see that human capital analytics is of high priority, but progress in practical development is slow. In fact, the percentage of companies who use predictive analytics for correlating HR data to business outcomes has barely changed in recent years. (Deloitte 2017, 97). It seems that whereas the demand for human capital analytics is strong, HR organisations ability to deliver has not yet fully developed.

For those organisations who have established human capital analytics function, the primary purpose for existence of the function is measuring organisational effectiveness, second most common is the ability to support strategic planning. Management commitment to human capital analytics improves when organisations can show concrete improvement in effectiveness, based on data analysis. (Phillips & Phillips 2017, 31.)

There seems to be commonly a lack of analytics competencies and analytics culture in HR organisations. In a recent study, when evaluating the analytics skills in their organisation, only 27% of HR leaders thought their organisation has readiness for analytics from skills perspective. Furthermore, only 24% saw that analytics is embedded throughout the HR function, and 22% thought their organisation has standardised approach to undertaking workforce analytics. (Guenole et al. 2017, 5 - 6.) Additionally, even 68% of HR departments do not have a standard corporate-wide HR data taxonomy. i.e. standardised set of terms and classifications in place for effective reporting and analysis (Rosslyn Data Technologies 2017, 6).

Moreover, credibility of human capital analytics seems to be an issue. Based on recent studies, less than third of HR leaders believe that human capital analytics function has strong credibility in their organisations, and 22% thought that they have achieved success in human capital analytics area each year (Phillips & Phillips 2017, 31). Furthermore, only 9% of senior executives have confidence in the quality of their HR data (Rosslyn Data technologies 2017, 5).

The width and quality of HR data is also a challenge for many organisations. Almost a third of companies think their data quality is poor, and that their data is fragmented. Only less than 10% of organisations think that they have usable, good quality data for analytic purpose. Furthermore, as data privacy is currently under tight scrutiny, organisations must worry about privacy and anonymity policies and data quality, and must focus on implementing methods and practises to protect employee data e.g. from abuse and theft. This further slows down utilising HR data. (Deloitte 2017, 100; Rosslyn Data Technologies 2017, 5.)

Current HR metrics are not very advanced. HR scorecards are mainly focused on costs and activities, and typical HR function targets involve achieving benchmark levels of lowest HR cost per revenue EUR or lowest HR headcount to total headcount (HR ratio). In HR measurement, efficiency gets a lot of attention but impacts and effectiveness are often not measured at all. Most HR functions collect data just for their own performance, and do not measure the impact of HR programs and practices on business. (Boudreau & Ramsted 2007, 38; Lawler et al. 2004, 28.)

Much time and effort has been used for improving the quality of HR measures in terms of timeliness, reliability and consistency, but the attention is almost worthless if the

measures lack context or have no consequence. Measurement quality should be considered in the context of decision support. (Boudreau & Ramsted 2007, 194.) There is a lack of analytic models that would show the relationship between HR practices and the organisational efficiency. HR should develop its ability to measure how human capital decisions affect the business - and how business decisions affect the human capital. (Lawler et al. 2004, 27.)

Unlike in other corporate functions, like finance and marketing, in HR there is considerable room for improvement when it comes to ability to gather and analyse the types of data and metrics needed in business. (Lawler et al. 2004, 33.) Financial measurement and analysis processes are well integrated with financial decision models, and same maturity can be seen in customer analysis system and customer relationship management integration with marketing decision frameworks. However, same maturity cannot be seen in HR data and measurement. (Boudreau & Ramsted 2007, 38.)

Let's take for example marketing: marketing segments customers in a very detail, plans actions for those segments, and measures the results of their actions. If there is huge change in customer turnover and retention, most companies dig deep to the data to find out who are the customer segments that are leaving. But if talking about employee turnover, digging into data to find patterns is still very rare, and HR does rarely any segmentation of employees, like is done for customers. That is somewhat surprising, considering that in most companies the personnel expenses form even 50 - 60 % of company's costs. While other corporate functions have been applying data science for decades, HR has practically just begun. (Bersin 2013.)

HR professionals with a clear business focus are still quite rare, and most HR functions do not have deep business understanding or "outside-in" approach in their actions. HR lacks analytical and data-based decision-making capabilities needed to influence the business strategy. Metrics are the language of organisational management, and if HR does not speak the same language as the management, it will not have a real impact. Workforce analytics is an emerging practise that can help enable HR becoming a true strategic partner for management. If HR professionals truly want to be part of the business, workforce analytics can help building the partnership. (Fitz-Enz 2010, 8; Levenson 2005, 28.)

## 4 Current state of HR reporting in case company

### 4.1 Data sources

Wärtsilä has several global HR information systems in use. SAP HR is in use globally for maintaining basic employee, employment and organisation data. Also, performance evaluations, competence assessments and development discussions are maintained in SAP HR. In addition, there are global systems for recruiting and learning management.

From data perspective, in consequence of common global HR information systems, there is several types of HR data available: core HR data, performance data, training data and compensation data to mention. However, despite of having several global systems, there are some data areas where HR relies on local systems and reporting tools and need to manually collect and combine company-wide data, such as payroll data, working time related data and financial data.

For internal reporting, there are numerous HR reports available in various systems for different target groups: line managers, top management, HR professionals and stakeholders in Finance. Reporting tools that are available for different target groups vary. Most common tool is Online reports, which is available for line managers and HR professionals. Other tools having reports include Executive Dashboard, WeLearn learning management system and Artist recruiting system; however, they have more limited user base.

Data maintenance is decentralised, meaning that each country is responsible for maintaining their employees' data per global guidelines. There is a taxonomy existing for HR data, however it is not standardised and validated throughout the whole organisation. There are recognised some quality issues in following the taxonomy rules, for example following right reason codes for personnel actions.

Data quality is measured quarterly. Measurement includes e.g. follow-up on timeliness of the data updates, coverage of mandatory data fields, and mismatches in data values. For reinforcing data quality, local HR administrators have data quality measures included in their incentive targets in corporate bonus program.

## 4.2 Roles and responsibilities

Currently, Wärtsilä does not have a centralised HR reporting function, instead reporting is done on different HR units. Local HR provides information for line managers and local authorities and external partners, area HR delivers data for business management and HR management team, and business HR to business management teams. Global HR focuses mostly on process-related reporting.

Much of the reporting is done on “self-service” style: there are pre-defined reports available in global HR information systems, from where users can execute reports themselves, per their access and authorisation levels. For example, local HR can report within the country they represent and business HR can report across their business line. If data request crosses business or area borders, the request is sent to global HR who validates the request and provides data, if arguments from data privacy point of view are adequate.

## 4.3 Current metrics and reporting tools

### 4.3.1 External reporting

The external HR reporting in Wärtsilä mainly provides headcount information for stakeholders, like investors and financial analysts. In addition, there is external reporting about corporate sustainability matters in HR functional area. External reporting follows common best practises and guidelines, like IRFS, GRI or OECD guidelines.

Both external financial reporting and corporate Annual Report include the basic personnel figures: number of employees in total, number of employees per business line and full time equivalency (FTE). Annual Report for 2016 includes also some personnel related sustainability statements and targets for 2020, with numerical reporting of current statuses:

Taulukko 1. Sustainability targets (Wärtsilä Corporation 2016, 14.)

Target	Status
<b>Well-being at work – Career:</b> Balance between external and internal recruitments. More than 50% of the open vacancies filled from internal applicant pool, including promotions and lateral moves.	In 2016, 58% of open vacancies were filled through internal selections for job level 3 and up, and 42% through external selections.
<b>Personnel development:</b> Development discussion coverage 100%	By the end of 2016, altogether 96% of the company's employees had completed development discussions.
<b>Diversity:</b> Increase the share of female employees to 20%.	New target, no current output level reported.

Wärtsilä's sustainability reporting is prepared in accordance with the Global Reporting Initiative's (GRI) G4 Sustainability Reporting Guidelines, comprehensive level. Sustainability report is part of Annual Report. In 2016 sustainability report were some verbal reporting on activities related to following topics, some including also calculated measures:

Taulukko 2. Reported sustainability topics (Wärtsilä Corporation 2016, 65-67.)

Subject	Measure
<b>Employee practices:</b> Equal opportunities Employee benefits and remuneration Minimum notice period Competency management Consultation and information procedures in Group companies Recognition of excellent performance	No quantified measures
<b>People management:</b> Transforming company culture Performance management Learning and development Engagement	Development discussion completion rate % Total number of training days, average number per employee Participation rate % to employee survey

The reported GRI indicators (per G4 Sustainability Reporting Guidelines, comprehensive level) related to HR fall into category Social Sustainability in sustainability report, and include the following:

Taulukko 3. GRI indicators in use (Wärtsilä Corporation 2016, 84-88.)

Topic	Indicators
Employment	Personnel number indicators G4-10, G4-11, G4-LA1, G4-LA12: <ul style="list-style-type: none"> <li>- Personnel</li> <li>- Number of employees by employment contract and gender</li> <li>- Permanent employees by employment contract type and gender</li> <li>- Total workforce by employees and supervised workers and by gender</li> <li>- Total workforce by market area</li> <li>- New employee hires</li> <li>- Employee turnover (resigned)</li> </ul>
Labour/management relations	Minimum notice periods regarding operational changes (G4-LA4)
Occupational health and safety	Percentage of total workforce represented in formal joint management-worker health and safety committees (G4-LA5) Type of injuries and rates of injuries, occupational diseases, lost days and absenteeism, and total number of work-related fatalities (G4-LA6) Workers with high incidence or high risk of diseases related to their occupation (G4-LA7)
Training and education:	Average hours of training per year (G4-LA9) Programmes for skills management and lifelong learning (G4-LA10) Percentage of employees receiving regular performance and career development reviews (G4-LA11)
Diversity and equal opportunity:	Composition of governance bodies and breakdown of employees (G4-LA12)

Despite of global HR information systems, some of the above-mentioned measurements, especially GRI indicators, require quite a lot of manual work. Global HR and local HR jointly provide the figures to finance and compliance unit for external reporting.

#### 4.3.2 Internal reporting

Internal reporting works mostly on “self-service” principal. HR online reports are available through the Employee Self Service (ESS) portal for HR professionals and line managers. The reports are traditional list-format reports, where user can enter some data selection criteria for execution, like period, cost centre, country, employment type, employee group etc. Technically, reports are built in SAP Business Warehouse (BW) and are delivered via SAP Portal.

Reports cover most areas of HR processes such as performance management, competence management, mobility, attrition, diversity and employee trends in numbers and percentages. Diversity refers to diversity of nationality, gender, age amongst other. Mobility refers to movements such as new hires, leavers, promotions, demotions and transfers in and out from businesses.

There are altogether 30 online reports available for line manager in 6 report categories. Manager can report data on his managerial scope, i.e. in organisation hierarchy his own unit and units hierarchically below. Data is reported on employee level. Benefits of the reports for manager are that they give good overview about reported matters over current state in own organisational unit, give possibility to look at situation as far back as 12 months, and aid in decision making related to measures given in reports.

For HR professionals, in Online reports tool there are 62 reports available in 8 report categories. Report categories are otherwise the same as for line managers, but HR professionals have two additional categories, learning & development and strategic HR measures available, and there are some additional reports in each other category for giving wider insight to related matters. HR professionals can report data within their responsibility area, i.e. business line, area or country.

Taulukko 4. Online reports in ESS

<b>Report category</b>	<b>Number of reports</b>
Compensation and Benefits	6
Competence Development	8
Demographics	7
Learning and Development	2
Headcount and FTE	19
Number of Employees and Trends	12
Performance Management	6
Strategic HR Measures	2
<b>Total</b>	<b>62</b>

There also some reports in Online reports tool which are only available for corporate Finance users. They contain official headcount numbers, distributed to needed reporting categories (per country, company, gender, contract type etc.). These headcount numbers are used in internal and external financial reporting.

HR Reporting Dashboard is a tool for executive users, typically with large organisations or with a role that has a global scope. Dashboards are built on SAP Business Objects (BO) tool. All measurements have corresponding reports and thus corresponding numbers in Online reporting (SAP BW), but dashboards allow simple overview, and show

trends, both graphical and numerical with possibility to dig deeper in data for own area of responsibility by filtering. In executive dashboards, data is not available on employee level.

There are five different dashboard views: Overview, Strategic HR Measures, Talent Management, Workforce Demographics and Rewarding, each of them having numerous indicators reported.

Taulukko 5. Executive dashboard indicators

Dashboard view	Indicators
Overview	35
Rewarding	6
Strategic HR Measures	18
Talent Management	16
Workforce Demographics	20
<b>Total</b>	<b>95</b>

There are also established HR KPI's, which are collected and reported twice a year to Global HR. Local HR is responsible for gathering and ensuring accurate data. Global HR KPI's cover four areas:

Taulukko 6. HR KPI's

Area	KPI
HR Effectiveness and Operations	Total number of FTE's working in HR Total number of FTE's working in Salary Management Annual HR Budget Average Time to hire
Employee Engagement (collected via Wärtsilä Quarterly Sustainability Reporting)	Average manpower Total left Reasons to leave Employee turnover Absenteeism
Training & Development	Average number of training days per person (collected via Wärtsilä Quarterly Sustainability Reporting) Average number of management & leadership training days per manager
Leadership Implementation	Development discussion compliance

## 5 Maturity evaluation results

### 5.1 Data gathering

Material for maturity analysis was gathered mainly from internal and external data sources: Wärtsilä internet and intranet sites, internal presentation, communication and training materials, and from current reporting systems. In addition to material and system review, I collected qualitative information from different parts of HR organisation using interviews and queries for gathering insight. I interviewed all HR unit heads, altogether 11 persons:

- VP, HR
- Global HR Process leads (Directors of Compensation & Benefits, Resourcing, Competence Management and Projects & Processes units)
- Business HR Directors
- Area HR Directors (NE, SEAF, MEA, AMER)

Before interviews I held a presentation in HR Management Team meeting about the study, its purpose and objectives, and how I plan to proceed. I sent the interview questions along with meeting invitations beforehand to respondents for giving opportunity to get acquainted to the topics beforehand. Five of the interviews were held face-to-face and six on Skype meeting. I used pre-constructed interview matrix that corresponded to questions in taking notes during the interview. In addition, I recorded all interviews for checking and completing notes afterwards.

In addition to interviews, I collected information from other HR professionals using an electronic questionnaire form. Questionnaire was sent to 28 HR professionals working in local HR, business HR and global process units. Along with questionnaire link I sent a message to respondents, explaining what is the purpose of the query, how and where data will be used and what will be the outcomes. Altogether 16 persons replied the questionnaire, which is 57 % of sent invitations. Respondents were quite equally distributed to different HR organisation tiers; 5 respondents were from global process units, 4 from business HR and 7 from local HR from all four areas.

For maturity analysis structure, I combined previously presented TDWI and INFORMS maturity evaluation model themes under four main topics:

### Organisation

- How and in what extent HR metrics and human capital analytics are used in everyday decisions?
- Who are the key stakeholders for HR data and metrics?
- Do the organisational culture, ways of working and HR's analytic skills support Wärtsilä human capital analytics pursuits?
- Is there cross-functional cooperation in providing human capital analytics?

### Analytics Capability

- What kinds of human capital analytics are utilised and where?
- What current HR metrics measure and demonstrate the effectiveness of HR function?
- Which current HR measures have the most business impact?
- What HR measures provide information to strategic issues?
- What are the methods, tools and technologies how the human capital analytics are delivered to the organisation?

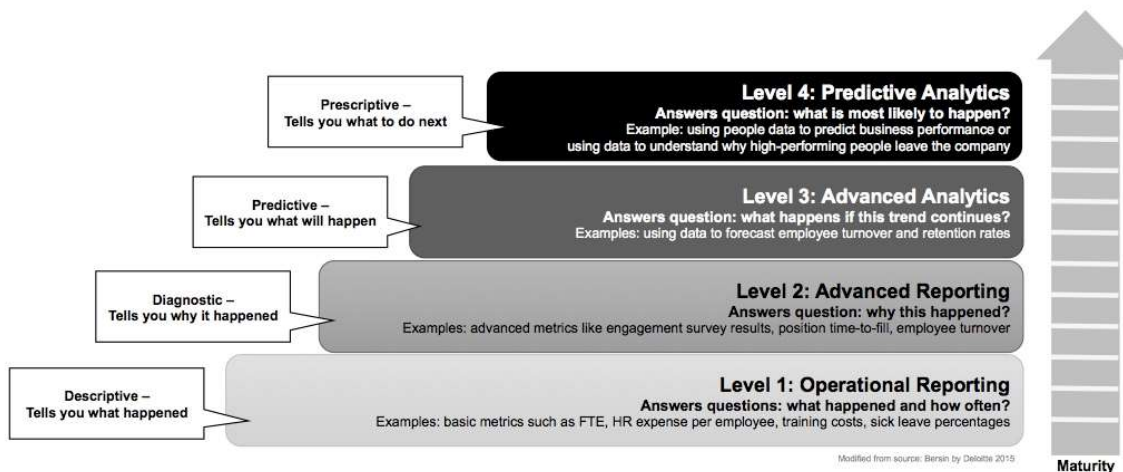
### Data & Infrastructure

- How well the current data sources cover the needs of human capital analytics?
- What technologies are in place to support human capital analytics initiatives?
- To what extent does the current infrastructure support analytics for all parts of the company and potential users?

### Governance

- How does the company manage its data in support of analytics (data quality and processing, data integration, access issues)?
- How coherent is the human capital data governance?

In addition to these specific themes, I asked respondent's opinion on where Wärtsilä is in analytics maturity path, requesting also for arguments for judgement, using below picture as help.



Kuvio 5. Picture of Maturity Model used in interviews

Full list of interview and questionnaire questions can be found in Appendixes 1 and 2.

## 5.2 Overall maturity

When comparing to the maturity ladder, Wärtsilä HR reporting and analytics was seen by respondents to be somewhere in-between levels 1 and 2. Of interviewed people, 55 % positioned Wärtsilä on level 1 and 45 % on level 2. Many mentioned that there are some spot-type exercises that have elements even of level 3, but they are not systematic or repeatable.

It was commonly seen that Wärtsilä uses a lot of HR reports, but not analytics, and comparison to analytics continuum supports that view. Operational HR reporting is very well in place, and it was seen that HR systems development in recent years has enabled also advanced reporting. There are many elements of advanced reporting existing, but any analytic pursues are sporadic and reactive, and are meant to serve some singular decision-making action rather than providing continuous or proactive insight.

Following are some quotes from the interviews:

- “We are using reports, not analytics. Local level metrics are used, and they differ per country, but are they the right ones or for right purposes?”
- “We are sending reports but we are not following actions.”
- “We do lots of reports but we do not analyse. We look back but do not foresee the future.”

Currently used HR metrics are majorly activity measures, and lacking performance and added-value metrics. Also, all current metrics are looking backwards, no measures are providing predictions on the future e.g. on talent acquirement/management, resourcing or organisational structures, how they are about to look like in the future.

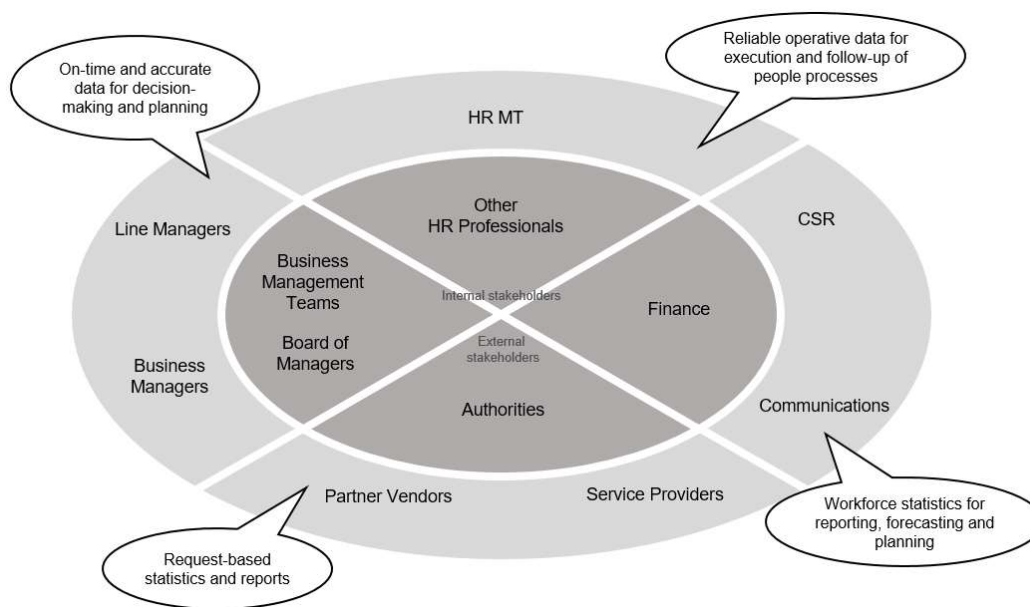
### 5.3 Organisation

In general, it was seen that Wärtsilä organisational culture supports using data and analytics. Wärtsilä is an "engineer company" where numbers are understood and well in use, but many respondents wondered if the most relevant metrics are in use. Reporting is very finance-oriented, there is very strong cost aspect in currently used reports and follow-ups.

Majority of respondents see that human capital analytics are not used in everyday decision-making as there is not much of it existing, but HR reports are used in some extent. Common opinion was that there would be relevant data available, but HR has no tradition on using it actively and systematically. Those cases where data is used are more ad-hoc spot analysis on specific cases than systematic and structured usage of data. Common opinion also was that there is no systematic follow-up on done actions based on the data.

Wärtsilä HR function is not used to make use of data and reports. Based on responses, there is a general positive attitude and willingness to learn how to use data, but not much analytic skills or knowledge, and no clear vision to what purposes data should and could be used. Some respondents thought that HR professionals may be also a little afraid to use data - even the very basic reports and metrics. General opinion was that awareness regarding importance of analytics is in place, but there are many open questions on how to make that happen and what it requires, especially from oneself.

The key stakeholders for HR data and metrics in Wärtsilä are other HR professionals and business management teams. From those groups are raised most of the ad-hoc questions, and to those groups most reporting and analytic pursues are addressed. Regarding other internal functions, main stakeholders are Finance and Compliance, but to those stakeholders the information flow is more one-way, HR delivering data to corporate reporting, without any dialogue. External stakeholders consist mostly of different authorities, labour unions, service providers (e.g. local payrolls, healthcare) and partner vendors.



Kuvio 6. Stakeholders

There is cross-functional cooperation existing in providing human capital analytics within different HR functions. However, it is not always clear within HR organisation where to ask for information if data request crosses area or business lines.

Instead, cross-functional cooperation between other business functions is not that much existing. There are some rare cases, for example FTE and costs are reported in cooperation with Finance, some mobility related analysis is done with Finance and external vendor, and some bidding and resourcing related activities in cooperation with contract managers. However, there appears to be more cross-functional cooperation on division and area level than on global level.

Regarding analytic skills and competences, global HR and business HR saw that they currently do have the skills to perform reporting activities required now, but would need and want to develop their HR analytic competences further to leverage data in the form of correlations and insight, and providing useful future-oriented conclusions and decisions. Many respondents thought that there is lot of information and possibilities to "play with data", but wondered how to learn to use correct and relevant information for purpose. Instead local HR felt that they currently pretty much have the skills they need for

performing the reporting that is expected and requested from them, and did not see that much need for building analytic competences.

#### 5.4 Analytics capability

It seems that there are not much current HR metrics in use that measure and demonstrate the effectiveness of HR function. Metrics are mostly outcome measurement like FTE (full-time equivalency of employee count) or number of new recruits. Nonetheless, there are a few examples of performance metrics that are in use: recruitment lead time, process completion rates, and training days, however they do not describe quality of the content.

To the question which current HR measures have the most business impact, most respondents mentioned money related items: FTE in relation to costs and spend, scenarios on average cost development, and compensation and benefits related information in terms of what is the cost impact to business. Many stated that Overall Performance Evaluation should be such metric, but it currently doesn't seem correlate on productivity, profitability or business results.

Business is interested in HR data combined to cost and sales, which currently isn't available. Information provided to business should be forward looking which give insight into forecasting. Business tend to approach people data warily - not much analyses is done, mainly relies on "gut feeling" and network.

Several respondents also brought up that Wärtsilä is transforming itself from very technical organisation to more people and leadership oriented, and there should be more talent analytics and employment lifecycle analytics in place (e.g. attrition, effectiveness of recruiting, engagement, career development, talent retention, competences and competence gaps).

Question about what HR measures provide information to strategic issues brought up several items, which currently are not covered but were seen by respondents valuable, and to which HR should provide insight:

- Leadership and Talent:
  - Do we have right type of leaders leading to right direction?
  - Which managers cultivate talent and promote employee development?
  - Do we have potential and talent in own organisation or should we acquire it? If, from where and how?
  - What are our Change Management capabilities?

- Engagement and Awareness:
  - How does our brand as an employer develop?
  - How committed people are to company vision and how well they understand the strategy?
  - How and where culture develops?
  - Do we understand who leaves Wärtsilä and why people leave?
- Workforce structure and Remuneration:
  - Do we stay competitive?
  - Do we have right resourcing models (e.g. usage of contingent workforce)?
  - Do we really pay for performance?

Needs and usage for reporting and analytics differs in HR organisation parts. Global units focus on deep process-related data, which is natural considering the role of global HR. Business HR has focus on FTE and cost follow-ups and target estimates, development of headcount, and Compensation & Benefits related information e.g. for job grade alignment and off-cycle merit validation. Business HR also uses annual HR process reports (development discussions, merits, bonuses) to track process status and provide summaries for businesses. Area and Local HR use widely basic statistics and demographics like employee lists, headcounts, FTE, salaries, gender split, contract status, sick leaves and absenteeism. Local HR also follows HR process status reports and completion rates to track employee compliance.

Wärtsilä external HR reporting provides HR information in forms of annual reports and sustainability reports, which both follow common global best practises. Wärtsilä's sustainability reporting is prepared in accordance with the Global Reporting Initiative's (GRI) guidelines, and Wärtsilä belongs to GRI GOLD Community, which is shaping the future of sustainability reporting. The GRI GOLD Community includes diverse companies and organisations across business, consultancies, civil society, academia, labour, public and intergovernmental agencies.

Internal basic HR reporting is very well available and often used. For example, during analysis period of one calendar year, Online HR reports were run over 26 000 times. Based on usage statistics, report category Headcount and FTE is most used (26% of all report runs), second most being Performance Management (22%) and third Number of Employees and Trends (20%).

Of individual reports, most often used report is “Performance Management - Target Setting Status”, which solely covered 10% of all report runs for a full calendar year. Second most used report is “Frozen FTE by Period”, and third is “Pay Report”. These three together formed 24% of all report executions. Altogether, 10 most popular reports covered 50% of all report runs for a year. 15 reports were run less than 100 times a year.

Current Wärtsilä HR KPI's represent the focus areas in Wärtsilä People Strategy: leadership, performance management, culture & engagement, and career/people development. However, they are lacking distinguishing KPI features: clear targets to which performance is measured against, ranges for performance (min - max), time frames when targets must be accomplished, and baselines for measurement. For example, there are KPIs “Employee Turnover” or “Average number of management and leadership training days per manager”, but there are no clearly stated target values for what they should be, what are the acceptable ranges for variation, and when those targets need to be met.

## 5.5 Data and infrastructure

Regarding data source coverage, it was widely seen that there is HR data well available and current data sources cover quite well the HR data needs. Common opinion was that there is plenty of information existing, and question is more about how and in what extent it is used. However, combining data from different sources is an issue, and hinders analytic usage.

Regarding the methods, tools and technologies how the people analytics are delivered to the organisation, common opinion was that basic HR reporting is very well available and it has improved a lot in recent years. However, those groups that use reports less often said that the user interface of reporting tool is not the easiest possible, and some users may be afraid and reluctant to use reports because of perceived difficulty.

One clear issue seems to be in combining data from different sources, as mentioned. Combining happens mainly in excel, and is manual and very laborious. Also, data definitions in different sources may vary, which makes combining even more difficult. Many respondents felt that as combining information takes a lot of time, and as HR is bombarded with work, it is hard to find time for understanding and adapting analytics in daily work. There is a lack of tools where data from multiple sources could be easily and dynamically combined, and e.g. some simple simulations could be done.

Some items that are currently existing but require heavy manual effort are development discussion and corporate bonus target analysis, amount of recruitment requests in pipeline, recruitment requisitions vs. new hire data linked to FTE change (i.e. which request has materialised to which hire), and FTE change per profit centre/business line. Many of these analyses are done manually every month, which requires a lot of work and is time consuming.

What many respondents are missing from data perspective currently is that employee total cost is not available in common systems, only in local payrolls, from where it needs to be gathered e.g. for calculating total employer cost for a certain unit. Same applies to done working hours and overtimes. Also, some respondents were missing data on employee competences, what type of work employees are doing, and about formal and informal skills.

What was also seen as important but non-existing is employment lifecycle analysis: after recruiting, how well employees perform in their positions, are they engaged, how they are remunerated, are they trained, what are their development needs and career aspirations and so on. Also, some were missing analysis about what explains good performance, for example does engagement have some effect on performance.

## 5.6 Governance

Based on survey responses and process observations, compliance matters like access rights and authorisations, data integrity and security, and audit procedures seem to be well in place. Respondents considered the practises to be strict, but it was seen that it is how they also should be. Many mentioned also that strict policies are necessary for being compliant with new GDPR, that takes into effect in May 2018.

Wärtsilä HR has been working a lot with data integrity and data quality matters during recent years, and general opinion was that data quality nowadays is in good shape. However, common opinion was that the ways how data quality measurement is done is not working well, and it causes much bad blood and resistance. It was seen that the data quality rules are strict, but there is inconsistency in following them – in some cases deviations are penalised but in some cases not, and this dispersion was seen arbitrary.

Some opinions were that managers should have better access to certain people processes regarding their employees. This comment concerns succession planning and merit review processes, where participant managers are limited. It was seen that as managers don't have access or visibility to the processes regarding their own subordinate employees, they either don't commit to end results.

## 5.7 SWOT of Wärtsilä human capital analytics

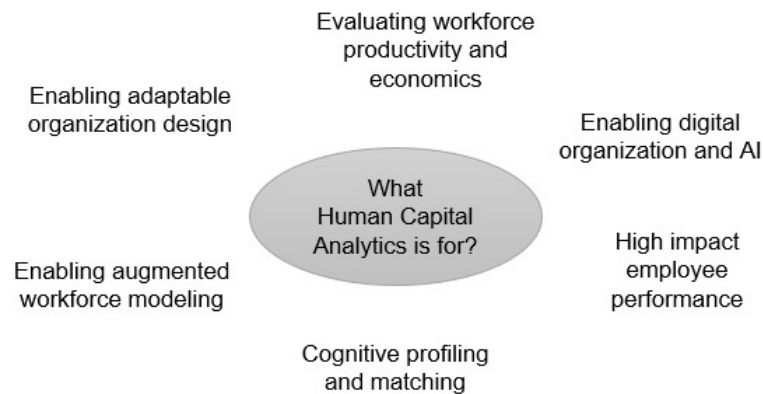
<b>Strengths:</b>	<b>Weaknesses:</b>
<ul style="list-style-type: none"> <li>- General positive attitude towards developing and using analytics</li> <li>- Current data sources for people data are quite extent and of good quality</li> <li>- Basic operational reporting well in place</li> <li>- Data quality and data governance practises in good shape</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of analytic skills and competences among HR organisation</li> <li>- Current metrics looking backwards, and have no target or limit values</li> <li>- Future/strategic perspective unclear</li> <li>- Current tools do not support combining and analysing data from several sources</li> </ul>
<b>Opportunities:</b>	<b>Threats:</b>
<ul style="list-style-type: none"> <li>- Utilising current data sources more efficiently, e.g. combining data from different sources</li> <li>- Expanding some current metrics to have dimensional elements</li> <li>- Utilising new data sources, e.g. talent or sales data</li> </ul>	<ul style="list-style-type: none"> <li>- GDPR and other regulations hinder usage of people data and development of analytics</li> <li>- Businesses focus on FTE runs over all other interest areas</li> </ul>

## 6 Development proposals

The recommended development items are derived from the survey responses and maturity analysis results, against literature, best practises and benchmarks. As both operational and strategic measurement have relationship to HR effectiveness and organisational performance, it is suggested to focus on key improvements of both (Boudreau & Lawler 2017).

### 6.1 Define the purpose and vision for human capital analytics

As a first development action, Wärtsilä should define the purpose for human capital analytics. It needs to define what it wants to achieve with human capital analytics pursues. There should be a clear vision on what human capital analytics could be for the company, and where, for what purpose and how it will be used.



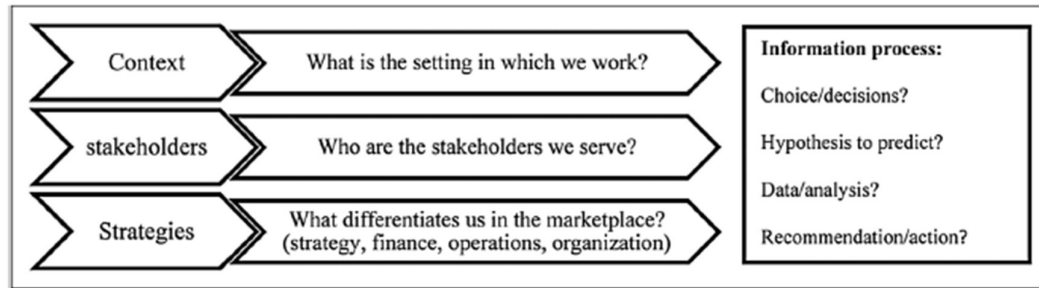
Kuvio 7. Alternative purposes for human capital analytics

Wärtsilä HR should define the future position and shape of human capital analytics. It includes thinking about several questions, like should the focus be in HR issues or business issues, is the nature of analytics consulting or transformational, or is focus on experimenting and exploring new areas or industrialising current matters. These decisions will construct the purpose and shape for the human capital analytics function.

When defining and choosing the vision and direction, there is a wide variance of functional HR areas where human capital analytics can be used. For example, engagement, organisational development, recruiting and talent acquisition, succession planning and diversity are each an area which can have a significant impact to the organisation, if taken effort. In most areas currently used methods are descriptive, and simply just tell what happened or is happening. Being able to reach the predictive analytics stage in these areas would bring a significant advantage, but understandably, that progress is difficult to do. (Phillips & Phillips 2017, 33.) Furthermore, as resources are scarce, it is important to choose the focus where human capital analytics will be used and for what purpose.

Ideally, human capital analytics should not start with data or even some anticipated approach to business problems, but with a real business challenge. Analytics should focus on a few selected important business issues. HR should ask itself - and the business - what are the biggest challenges for our business over the next 3—5 years, and how HR can support the business for these challenges. That is typically the best starting point for workable analytics. (Rasmussen & Ulrich 2015, 239.)

This outside-in and business-centric approach is presented in the figure below:



Kuvio 8. Information for decision making (Rasmussen & Ulrich 2015, 238)

The process starts with a few key issues: what is the context, who are the stakeholders, and what are the strategies. From those, the information process proceeds with four questions: what choices do we need to do, what can we detect and test, what data can we collect and analyse, and what measures we recommend. (Rasmussen & Ulrich 2015, 238)

## 6.2 Shifting the focus from past to future, with connection to strategy

One key development item to Wäertsilä for progressing in human capital analytics is shifting from descriptive activity measures to performance and value-add measures. In practice, this would mean that focus would change e.g. from measuring whether performance appraisals are completed and on time to measuring if our performance management system is really a tool to executing our business strategy, or from measuring number of new hires to how well do the hired key talents perform compared to others or to the market supply.

Furthermore, related to the future aspect and based on maturity analysis and interviews, there is a need to clarify the strategy focus. Human capital analytics should be driven from strategy. Wäertsilä People strategy has four distinct focus areas: leadership, high performance, culture and engagement, and talent development. Human capital analytics should provide insight for those topics, help setting targets and milestones, and defining necessary actions. Also, selected HR KPI's should have clear levels and ranges for success, and show progress in those strategic matters. Selected measures should show what is the level today, what it should be in the future, and what is the impact or value of the desired change.

Strategic direction should be indicated by a clear vision, and analytics should show if actions done are leading to right direction. HR should be focusing on matters that have impact and are meaningful, have true importance and value-add, and are predicting future needs. Demand for analytics should be reflected from stakeholders who have problems that can be solved analytically. Below are some quotes from survey participants.

“We should be able to measure how committed employees are to company vision and whether they understand what our strategy means.”

“We should have future-focused measures that provide information against People Strategy”

” We should be able to follow for example how competences develop e.g. in digitalization, how our culture evolves, how well people commit to transformation and how well we represent ourselves as an employer when we are competing on future workforce.”

Transformation affects the whole industry Wärtsilä is operating in, and at the same time the whole concept of working and workforce is about to change, e.g. due to digitalisation. Transformation requires also different approach to how people are managed and engaged. For HR, moving from delivering data to providing actionable insight requires that we ask the right questions on how our workforce contributes to company’s success. Strategic questions to answer could include e.g.

- Where our strategy requires that our organisation and talent is better or different than competitors, and why?
- What are the critical roles in 1-5 years’ time and what skills do they need?
- What are the key strategic positions in the company and how should we manage them? How are they currently performing?
- How well does our talent in strategic roles compare to the market supply?
- If we shifted our strategic goals, which of our organisation structures or employees would have to change the most?
- Do we have the capability to change?
- Where and how does our culture evolve?

Based on survey responses, one of the most critical issues for Wärtsilä in future is the talent. One target should be developing a “talent inventory” which identifies what talent there is, what talent is needed, and what is the gap and necessary actions. Building an analytical framework and collecting the data will help to understand what talent has the impact and then act on these insights. As a case example, Finnish technology company Tieto has identified that there is a shortage on necessary digital talent in the markets. Tieto has built a dashboard for managers which shows what skills they need to recruit,

what skills are being recruited, and how many new people are expected to join the company in the next month. Tieto also use analytics to analyse attrition rates for finding better ways of retaining key staff. (Goodwin 2017.) Similar development items could be beneficial also for Wärtsilä.

### 6.3 Gaining analytics competences

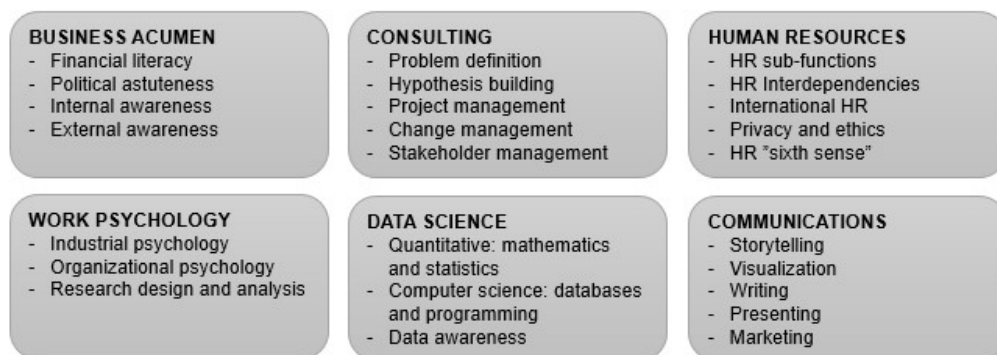
As stated by benchmarking data (chapter 3.4), most organisations do not currently have skills in analysis, research design and data interpretation within the HR function. The same seems to apply also to Wärtsilä HR. It was widely seen in the survey that currently HR organisation is lacking balanced set of analytics skills and capabilities. Progressing in analytics path would require developing analytics competencies in HR organisation, perhaps establishing even separate analyst positions. Below are some quotations from survey respondents.

“Competences are focused now on reporting, but need improvement on analytic skills. Awareness for analytics is in place but no knowledge how to make it happen.”

“HR needs new kind of roles who can dig into the detailed information and follow the trends etc.”

“Creating awareness, skills and tools within HR, learn how to use and get excited of data. But it may be that even if we develop competences among existing HR's, real progress may require recruiting a data analysts to HR - data analytics is rare competence in HR.”

Human capital analytics involves a wide range of skills — from problem solving and data analysis to visualisation and statistics. Figure below illustrates the six skills for successful human capital analytics.



Kuvio 9. The Six Skills for Success (Guenole, Ferrar & Feinzig 2017, 170)

The mix of necessary skills include business acumen, HR function knowledge, consulting, work psychology, data science and communication skills. All these skills and competences rarely exist in one person, therefore successful analytics requires building team or community around the subject. Successful analytics team comprises of people with widely varying skills and competences, working together. (Guenole, Ferrar & Feinzig 2017, 170)

One of the biggest gaps in the current capabilities of many HR analytics teams is the ability to “tell the story” behind the data, so that business leaders can quickly grasp the implications, and the same gap seems to apply for Wäertsilä.

“We need to learn storytelling and insight – connecting the dots”

“Learn how to provide insight, force people to take another perspective and lose myopia”

To provide value, the human capital analytics team must translate information into solutions, and stakeholders must take action (Deloitte 2017). HR can gather a mass of data and display it in nice and colourful charts, tables and graphs, but in the end, those don't tell the audience the story of what happened, why, when, where, how, and to whom. HR shouldn't report something if it does not tell a story. Storytelling brings authenticity and reality to observations about the results and findings. (Fitz-Enz 2010, 184.)

Human capital analytics should depict the logical relationships between the people strategies and the business strategies. These relationships should be communicated in a common language that all stakeholders can understand. HR should tell the story behind the numbers, and personalise statistical analysis, which can be sometimes otherwise very dry. Storytelling is a good way to get leaders to understand the people behind the numbers. (Pease, G. 2015, 50.)

When evaluating the current and needed competences for human capital analytics, it needs to be though whether to establish human capital analytics as a function internal in HR, or in cooperation with other functions or business analytics. Furthermore, if the function is internal in HR, is it central or decentralised. Additionally, one important question is whether human capital analytics function is developed internally at all, or is it outsourced. Both ways are in use: based on recent study, 58% of organisations who have established human capital analytics function are using internal resources, whereas 42% are using external offering (Phillips & Phillips 2017, 31).

To gain analytics skills internally, company can either recruit or build competence. As available talent for analytics professionals who understand HR is scarce, many organisations wrestle with the question whether to recruit analytics and data science professionals and teach them HR expertise, or develop current HR professionals to handle analytics tasks (Phillips & Phillips 2017, 32).

One way to gain competence is to build analytic skills within organisation. This "datafication" considers many things in HR, for example understanding data sources, data management and data quality, learning the tools and techniques used for analysis, and enhancing competences needed for analysing, interpreting and utilising the data (Bersin 2013). HR needs to build a foundation of analytic skills for large population of HR leaders, generalists and functional experts to better understand and utilise the data. General analytic skills, like ability to understand and communicate the results of advanced statistical analysis within HR and to line leaders, should be developed widely in the HR community as most HR professionals need these skills. (Levenson 2005, 31.)

The other way to gain analytic skills is recruiting HR professionals with understanding of basic statistics (like mean, median, standard deviation, hypothesis testing, regression analysis, etc.), but candidates with these competences are scarce, and experts with advanced statistical skills (multivariate analysis, factor analysis, survival/hazard analysis, etc.) are even rarer. (Levenson 2005, 31.) Some companies have looked for help to HR departments from other functions like finance, marketing, and operations. This cross-functional approach has many times proven to be effective, as it can forge partnerships with these areas, and enable combining HR data e.g. to financial figures or operative metrics. But in the long term, analytics skills must be within the HR organisation itself, and analytics skills must be an important HR competency. (Lawler et al. 2004, 34; Rasmussen & Ulrich 2015, 239.)

Growing analytics skills within HR and building a solid foundation of analytic capabilities among HR professionals is not an easy task and cannot be completed overnight. It is a pursuit that may take a while to complete, but that is needed for HR to maximise the power of analytics to add strategic value. (Levenson 2005, 31.) That same applies to Wärtsilä.

#### 6.4 Enhancements to infrastructure

Data collection and infrastructure is not a big problem for Wärtsilä, but there is some room for development. Although satisfaction to current reporting tools is on a good level, there are a couple of enhancements that could be done. One very practical development item is that current metrics require a lot of manual work in excel. For example, combining information from target setting, competence assessments, overall performance and merit reviews into one takes a lot of effort. Also, learning management, competence assessments and development plan data were wished to be linked together. Data is well available in current reports, but combining it to meaningful entities takes a lot of effort.

Current systems are not integrated from data and reporting perspective, there are many separate tools, and data is not aggregated in a form that is user friendly. Every tool has its own data model and a different user interface, and it frustrates users that the systems are not talking together. Common wish was that somehow all systems would be connected, reports could be easily tailored by the end user, and there would be no more need for extensive excel usage. Below are some quotes from survey participants.

“More real-time information, having dynamic and easy-to-use tools that help analyse, instead of having to combine excels.”

“We need analysis tools that can simply utilise dimensions like blue collar/white collar, profit centre. Would be good that our people analytics would give more possibility to forecast for example the FTE development globally, future competences needed globally and in comparison, what do we have and where. Tools could also support the business more by providing visual charts and summaries for easy to make conclusions & actions on.”

Small nuisances in everyday use were for example that profit centre, which especially business HR uses a lot in report is not available in SAP HR as filter. Also, it was seen that job grade and job family should be included as default in all reports. Some mentioned also that there is a need to better pay attention to correct usage of codes when maintaining employee data; e.g. when using off-cycle merit or promotion.

One item for further development is also clarifying and documenting governance strategies, policies and privacy standards, and establish clear accountabilities and rules for maintaining data. Also, data dictionary should be updated and validated. Clear data governance model helps building deeper understanding of the data, creates end-to-end data lifecycle management across systems, and guides decisions on data management and access (Guenole, Ferrar & Feinzig 2017, 152).

## 7 Validation and conclusions

The results of the maturity evaluation and development proposals were gone through and discussed in a validation session together with Wärtsilä HR Management Team. HR MT agreed with the evaluation results and observed maturity level. A little surprise for many was that based on recent studies, Wärtsilä is not that much lagging behind in analytics continuum compared to other companies as was the notion beforehand. Common conception on the general status of human capital analytics in companies is that more companies would be further in continuum than the reality is, and it was discussed how much that perception is affected by the “hype” that has been around this subject in recent years. There is much talk and tens of articles about human capital analytics, but not many companies have yet managed to implement it.

There was also lively discussion about proposed development actions. It was agreed that creating a common vision and mission for human capital analytics in the company is necessary, but it will require broad internal discussion within HR about what Wärtsilä wants to achieve or accomplish with human capital analytics, as that purpose or target is not currently clear. For supporting Wärtsilä strategy, there are several possible and relevant directions on where human capital analytics vision could direct: enabling adaptable organisation design for being flexible and competitive in changing environment, evaluating workforce productivity and economics for ensuring profitability, ensuring high impact employee performance for business results, to name a few. As the HR resources are scarce and not all can be developed at once, HR needs to discuss and decide on where the primary focus for analytics will be set.

One specific item which was discussed is that human capital analytics is one of the core requirements to the consumerisation and digitalisation of HR, which is also one of the key development targets for Wärtsilä HR. Developing capability in human capital analytics is required to deliver the initiatives of e.g. improving and personalising the employee experience, or designing new flexible organisational structures. Investment in analytics is also a mandatory element for being able to utilise artificial intelligence (AI) in HR, which is one of the future target areas in Wärtsilä. For example, enhancing employee experience by recommending training courses or internal job opportunities requires analytics on employee's skills, aptitude for learning, and motivation (Green 2017). It was agreed that developing human capital analytics capability in Wärtsilä HR organisation is an inevitable task to proceed with digitalisation and utilisation of artificial intelligence.

There were some thoughts expressed in validation session about possible shape of human capital analytics unit, but there was not a harmonised or common view of future state. It was seen as an open question whether capabilities should be within HR or in collaboration with other Wärtsilä functions. The fact that there is currently very little cross-functional cooperation in reporting and analytics area with other functions causes reservations also about future ability to collaborate in analytics area. Also, it was seen that current lack of competences within HR complicates planning the analytic function.

Indeed, survey results on analytics competencies in Wärtsilä HR indicated that there is a gap in the needed and existing competences. For HR MT, it was a little surprising finding that local HR professionals do not get that much requests or initiatives for analytic approach than global or business HR; rather they get more straightforward basic report requests. There was speculation about whether that is because line managers do not know or dare to ask for it, similarly as they ask detailed analysis e.g. from finance. Regarding HR analytics competences, it was agreed that one practical step for approach could be that current analytic competencies within HR would be evaluated and mapped, and a gap analysis performed for the required competences. Then it remains to be evaluated how the competence gap could and should be filled, along with the decisions on how the shape of the analytics function would be formed. However, a general view in discussion was that the Wärtsilä HR in general needs to be upskilled to understand workforce economics. Effort should also be put on building a coherent analytics culture, not just individual competences.

As a conclusion, it was a shared view that human capital analytics can really support in executing Wärtsilä business strategy. Human capital analytics can provide insights that enable identifying and building right workforce structure, and help improving collaboration, culture and team effectiveness. Human capital analytics can also help Wärtsilä to prepare for future of work: managing augmented workforce, automation, crowdsourcing and usage of contingent workforce. It can help in preparing a workforce strategy that considers how work is actually done, not only just changes in required workforce demand.

Based on results, in Wärtsilä there is a good basis for future development endeavours in human capital analytics. Wärtsilä HR can still grasp on the opportunity to gain competitive advantage and be the leader in the industry by developing and utilising human capital

analytics, and using it for improving utilisation of human capital and gaining business results. As the research period was short, the action program to implement changes remains to be executed outside this study. It remains to be seen if Wärtsilä HR manages to establish the new analytics culture and build it to be permanent in the organisation. Finally, I am quoting David Green from IBM, one of the main influencers in human capital analytics discussion, who recently said: “If you start now, you are not very late”.

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## Appendix 1: Interview Questions

1. Based on your experiences, how and in what extent HR metrics and people analytics are used in everyday decisions? What kinds of people analytics are utilised and where?
2. From your perspective, who are the key stakeholders for HR data and metrics?
3. How well the current data sources cover the needs of people analytics? Have you missed some data which is not available?
4. In your opinion, to what extent do the organisational culture, ways of working and HR's analytic skills support Wärtsilä people analytics pursuits?
5. Is there cross-functional cooperation in providing people analytics in Wärtsilä? If yes, can you give some example?
6. If compared to analytics maturity model (picture attached), where/in what level you think Wärtsilä is in its path of people analytics?
7. In your opinion, what current HR metrics measure and demonstrate best the effectiveness of HR process, policies and practises (= show how effective we operate as an HR organisation)?
8. Which current HR measures in your opinion have the most business impact (= show where and how people decisions affect the business results)?
9. What are the most critical issues in Wärtsilä strategy/Business Line strategy/People strategy? What HR measures provide information to those issues?
10. Are you satisfied with the methods, tools and technologies how the people analytics are delivered to the organisation (e.g. current KPI's and metrics, HR systems, reporting tools)?
11. How coherent you see the people data governance (e.g. data integrity, data quality initiatives)? Do you see any improvement areas in current data management?
12. If you could now change or develop anything in area of HR reporting and/or people analytics, big or small, what would that be?

## **Appendix 2: Questionnaire Questions**

1. Which current HR metrics, reports and measures you use the most and for what purpose?
2. Have managers or other stakeholders asked for HR related information you have not been able to provide? If yes, what kind of information?
3. In your opinion, which of the HR metrics support the business/line managers best?
4. Do the current systems and reporting tools support utilising HR data (e.g. SAP HR, online reports, SABA)? What tools would you develop and how?
5. Do you feel that you have the necessary skills and knowledge on how to understand and utilise the information provided by HR reports and analytics? If not, what kind of skills and/or knowledge you would like to develop?