SERAFIN | WHITE PAPER

The unique success factor: Quality Innovation

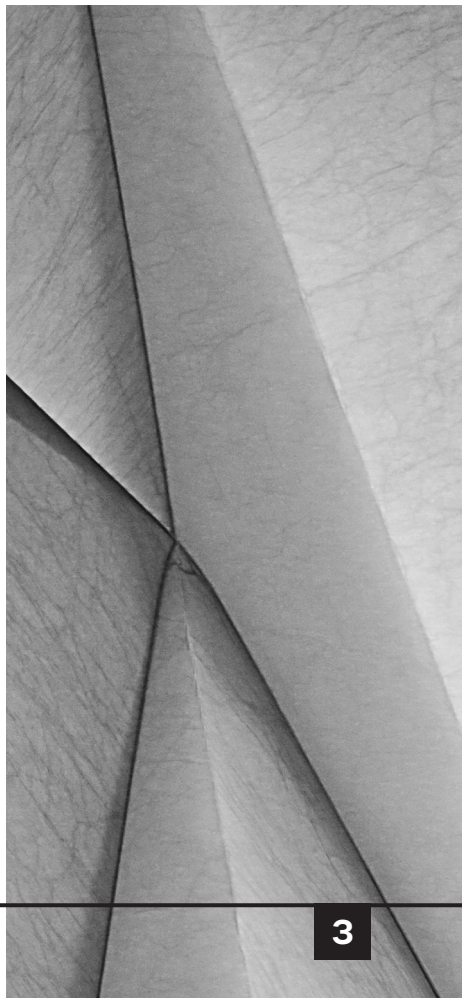
Executive Summary

Quality Innovation is Serafin Innovation Hub's special investment approach to stock selection. This approach combines traditional quality analysis, which focuses on the current state of the company, with modern innovation analysis, which forecasts the future qualitative strength of the company. Innovation investments by listed companies are difficult information for the financial market to process, as a deep understanding of innovation is needed to estimate the success of innovation projects. The financial market often misjudges the fact that innovation-efficient companies have a higher stability of return on equity (RoE) and greater potential for success. Financial markets often underestimate innovative companies in traditional industries and overestimate them in innovative industries. Sometimes supposedly "boring" companies are very innovative, while modern companies may not be as focused on innovation as one would think. Thus, Quality Innovation can contribute decisively to the performance of a portfolio and for this reason, it represents the central selection criterion for the portfolios of the successful innovation funds of Serafin Asset Management.

The return on equity (RoE) of companies typically decays over time. This is often due to a lack of ongoing investments and reliance on their existing success. In contrast, particularly innovation-efficient companies show on average a significantly lower decline in their return on

For an innovation to qualify as a Quality Innovation, the focus must be on the long-term profitability of the innovation. Quality innovations have characteristics that lead to higher customer satisfaction and loyalty, greater market share, and long-term profitability compared to the competition.

Companies that focus on a qualitative innovation strategy try to keep profitability high through innovation and to cover research and development expenses from existing cash flow. Due to their innovative products or services, they often generate a contribution to earnings. This cash flow can be used to finance future innovation and growth initiatives.



equity over the entire period. This gives them an advantage over the broader market.

Qualitative innovation can be made measurable through the concept of innovation efficiency. Innovation efficiency is closely linked to the concept of productivity, which will be improved when the same amount of innovation investment generates higher innovation outcomes than peer firms. Through high innovation efficiency, the company ensures its quality long-term in the form of higher corporate performance.

Our selection approach in the Serafin Innovation Hub is based on a quantitative input-output comparison within the framework of a mathematical optimization procedure that we have tailored to the causal idea of measuring innovation efficiency. Since there are no uniform indicators for innovation and not all of the indicators are always accessible, we use various approximations. Using the innovation efficiency measurement, a ranking of the most innovation-efficient companies is obtained. The top 60 companies in this ranking are also subjected to a detailed qualitative review by the Serafin Innovation Hub team. In particular, the Serafin Innovation Hub has adapted and expanded the qualitative review step to reflect the latest research findings. This involves matching companies with current innovation trends based on millions of recent news articles using advanced artificial intelligence algorithms. Likewise, the analysis of the company-specific intellectual property situation has been expanded to obtain an objective assessment of the portfolio candidates' patent portfolios. The resulting innovation assessment is in turn used for the in-house innovation investment products and shared within the company.

The innovation factor, especially in the form of innovation efficiency, can thus generate significant alpha in the stock market.

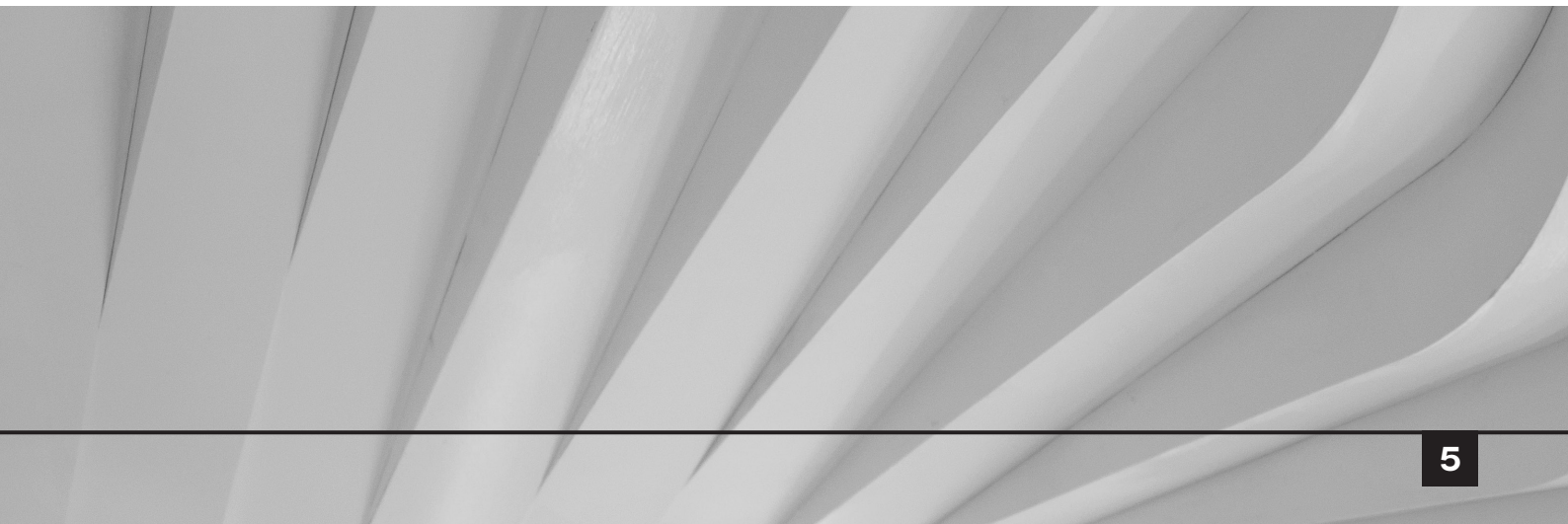
It is precisely this circumstance that the Serafin Innovation Hub takes advantage of.

I. Quality Innovation

The Serafin Innovation Hub defines innovation as an improvement or introduction of a new product, service, process, or business model that provides significant value to customers and the company. Innovation is usually accompanied by improvements in design, features, functionality, usability, and sustainability, and accordingly makes a significant contribution to the creation of lasting value in the company.

For an innovation to qualify as a Qualitative Innovation, the focus must be on the long-term profitability of the innovation. Qualitative innovations have characteristics that lead to higher customer satisfaction and loyalty, greater market share, and long-term profitability compared to the competition. Companies that focus on a qualitative innovation strategy often generate higher cash flow as a result of their innovative products or services. This cash flow can be used to finance future innovation and growth initiatives without incurring additional debt. For this reason, a qualitative innovation strategy is often reflected in low debt levels. A successful qualitative innovation strategy results in increased corporate innovation efficiency. Innovation efficiency is therefore closely linked to the concept of productivity, which will be improved when the same amount of innovation effort produces more innovation output or when less innovation effort is required to produce the same innovation output.

The qualitative innovation strategy is characterized by various features. Most important are the companies' market orientation and consideration of real customer needs as well as the orientation towards future technologies. Long-term goals are pursued to create sustainable competitive advantages. Optimizing short-term profits is not the main focus. When it comes to collaboration, innovative companies rely on the openness of employees and management to ideas. This means that employees, customers, and partners are involved in the innovation process and ideas are exchanged. At the same time, a qualitative innovation strategy encourages employees to experiment and learn from mistakes. The aim is not to achieve quick success, but to create successful innovations in the long term.



It is important to note that qualitative innovation does not always involve significant changes to the product or service, but can also be accomplished through small, incremental improvements. These can be achieved through continuous improvement processes, taking customer feedback into account, and monitoring market trends and behavior.

The influence of innovation on corporate growth is visualized in the following graphic. In addition to general market momentum and share gains in existing market segments, growth is primarily generated by incremental and radical innovations.

While incremental innovations largely involve minor improvements to existing products and services, radical innovations focus on major technological leaps and completely new approaches to solutions. Radical innovations tend to be associated with greater uncertainties and risks, but on the other hand, show great potential for financial success.

Qualitative innovators should focus on both incremental and radical innovations in order to reap the benefits of both types of innovation. Incremental innovations can help to improve existing products and services, while radical innovations can help to open up new markets and make the company more competitive in the long term. If radical innovation projects succeed, entire industries are often disrupted.

Additional potential for growth and profits is provided by the right merger and acquisition (M&A) activities. M&A activities are important from an innovation perspective because it allows companies to quickly and effectively access new technologies, products, and market segments that they might not be able to develop on their own or that are not available to them due to resource constraints.

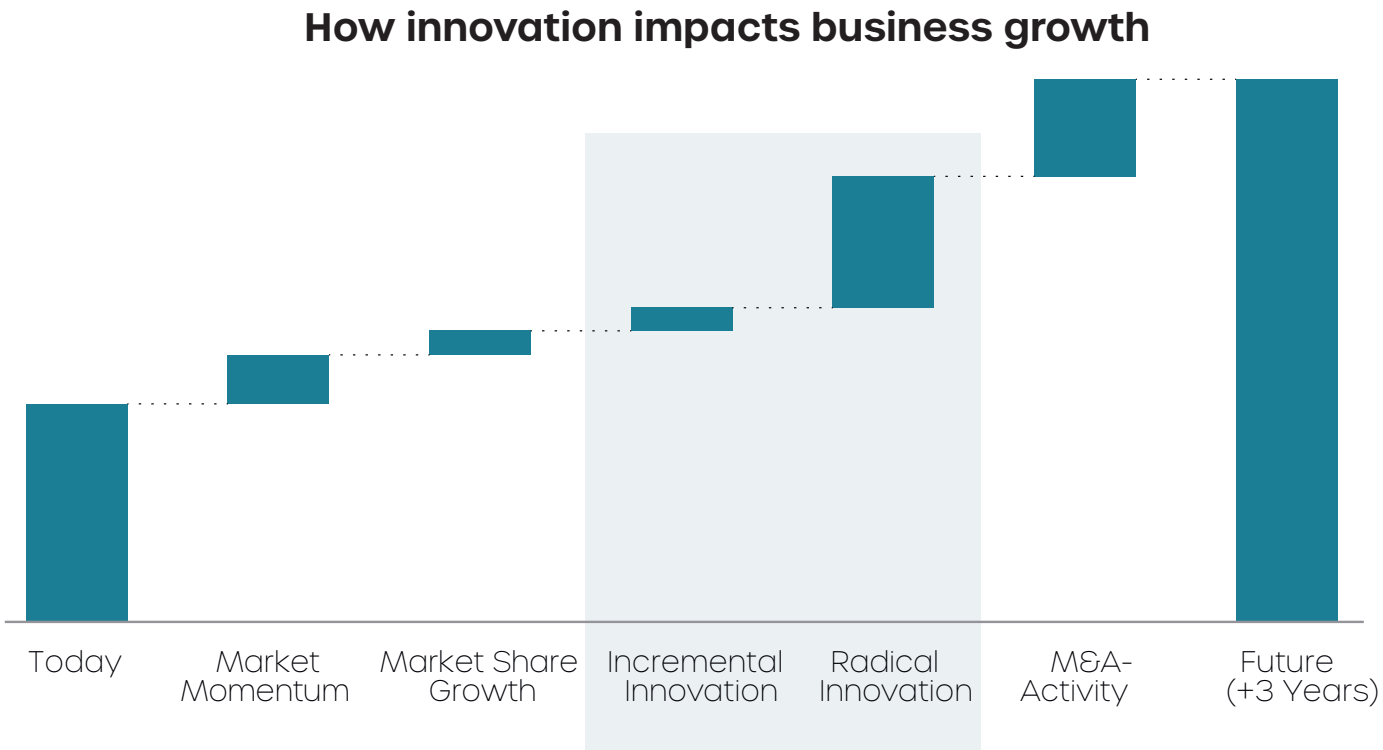


Figure 1: Growth opportunities of a company. Source: Own representation based on McKinsey (2019).

II. Innovation, profitability, and competitive advantages

The return on equity (RoE) of companies typically decays over time.

In contrast, particularly innovation-efficient companies show on average a significantly lower decline in their return on equity over the entire period. This gives them an advantage over the broad market. The reasons for this can be complex. For example, better operational efficiency, the courage to launch risky innovation projects, and a scalable product portfolio can be reasons. The consideration of innovation efficiency is useful in identifying these companies. This is also reflected in the empirical comparison of the holdings of the ALPORA Innovation Europe Fund compared to the top 20% of the MSCI Europe (quintile 5) during the years 2014 to 2022. Over a 4-year horizon, the return on equity of the top 20% holdings of the MSCI Europe continues to decline, while the decline in the ALPORA Innovation Europe Fund holdings, which are characterized by high innovation efficiency, is much less pronounced.

This means that even innovation-efficient companies cannot completely escape RoE decay. Therefore, other effects such as the right corporate strategy, reduction of overhead costs, expansion into new markets, or margin changes have to be considered.

DEVELOPMENT OF RETURN ON EQUITY (ROE) IN % OVER 4 YEARS
ALPORA INNOVATION EUROPE VS. MSCI EUROPE

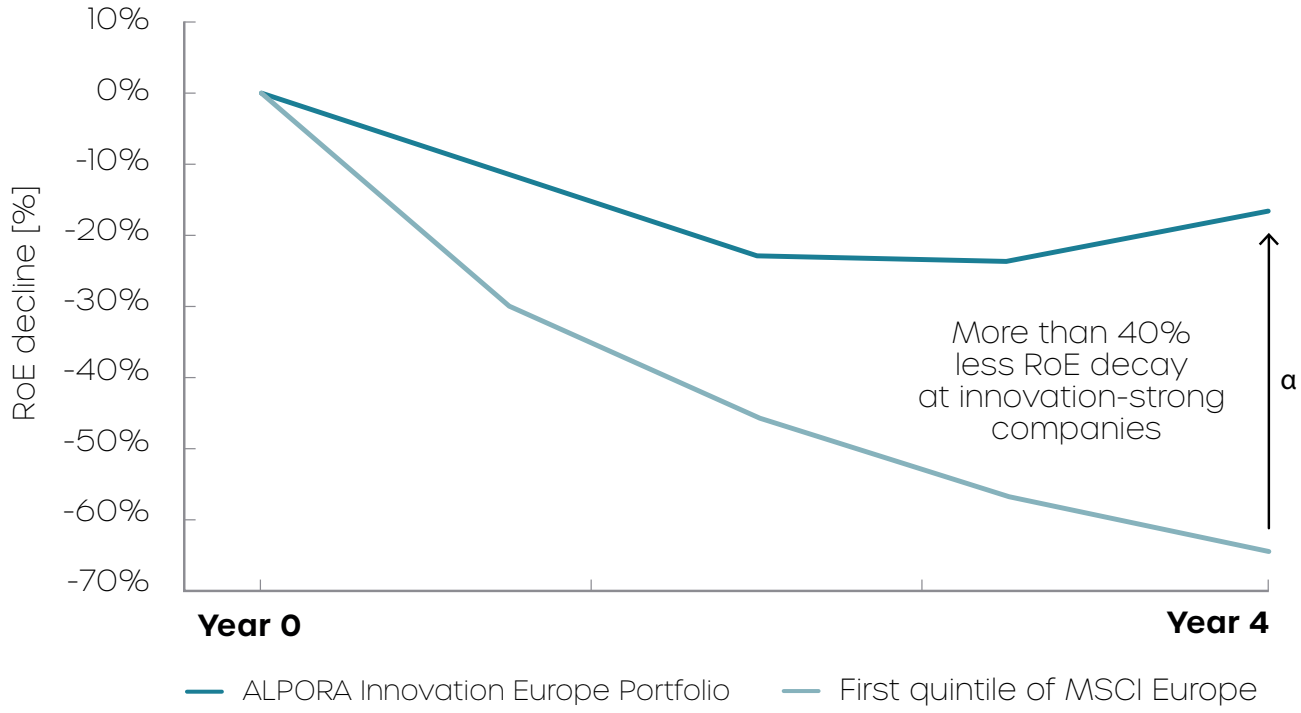


Figure 2: Decay in return on equity. Source: Own analysis, Bloomberg.

GETTING AHEAD OF THE MARKET

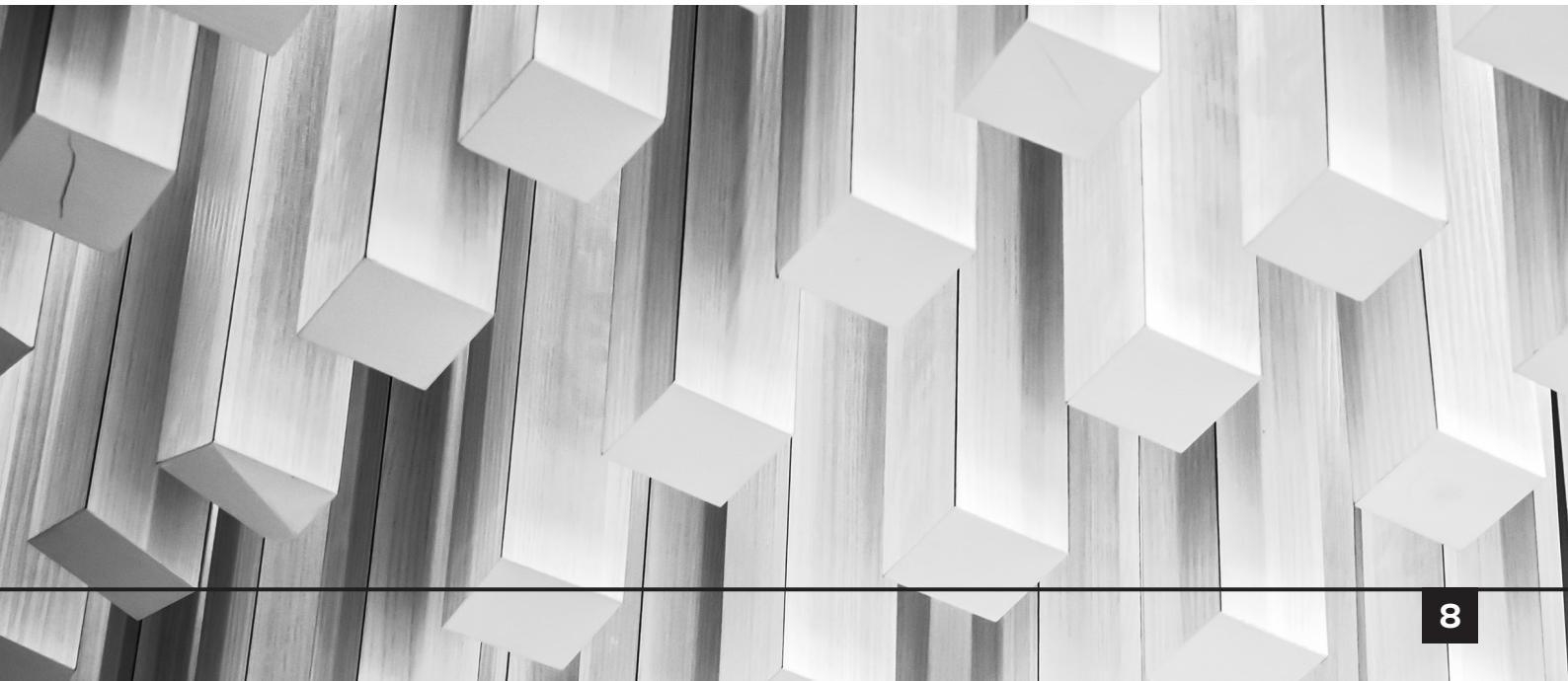
Our investment philosophy is based on the fact that the market does not immediately recognize the higher earnings stability of innovation-efficient companies and only values them appropriately over time. Therefore, better performance can be achieved by analyzing innovation efficiency. At the corporate level, innovation is seen as making a contribution to achieving a competitive advantage. Technologies are changing rapidly, product life cycles are shortening, and competition is increasing. This makes innovation a crucial factor for the survival of companies in the modern business world.

The resource situation of a company represents a widely used basis for explaining a company's competitiveness and financial strength (Kauffeldt, 2014). The idea of viewing companies as a set of resource bundles goes back to the work of Penrose (1959). The resource-based view is built on the idea that a company's competitive advantage can be explained, first, by its specific advantageous resource situation and, second, by the more efficient use of resources. This understanding of resource theory explains why the different innovation capabilities of companies can lead to different competitive advantages and growth rates of companies. Innovation capability enables companies to improve business performance with limited resources.

The differences in performance between companies do not usually arise from the level of resources, but rather from the effectiveness with which companies convert their innovation capabilities into successful innovation strategies and thus increase their overall innovation success. The efficiency of the innovation process (i.e., how efficiently a firm uses its internal capabilities to create innovations from firm resources) increases firm performance (Bayrle, 2021; Cruz-Cázares et al., 2013).

Overall, investors in quality innovation seek to invest in companies that are not only successful today, but also have the potential to continue to innovate and succeed in the future. Quality innovation is also characterized by pursuing both incremental and radical innovation. Radical innovation enables new markets, which are characterized by short-term monopolistic rents.

A study by Kogan and Papanikolaou (2019) found that an increase in a company's innovation



activities (by one standard deviation) leads to an increase in the average profit level of about 8% over the next ten years. On the other hand, an increase in competitors' innovation activities (by one standard deviation) leads to a decrease in the focal company's profits of about 5% (see figure below).

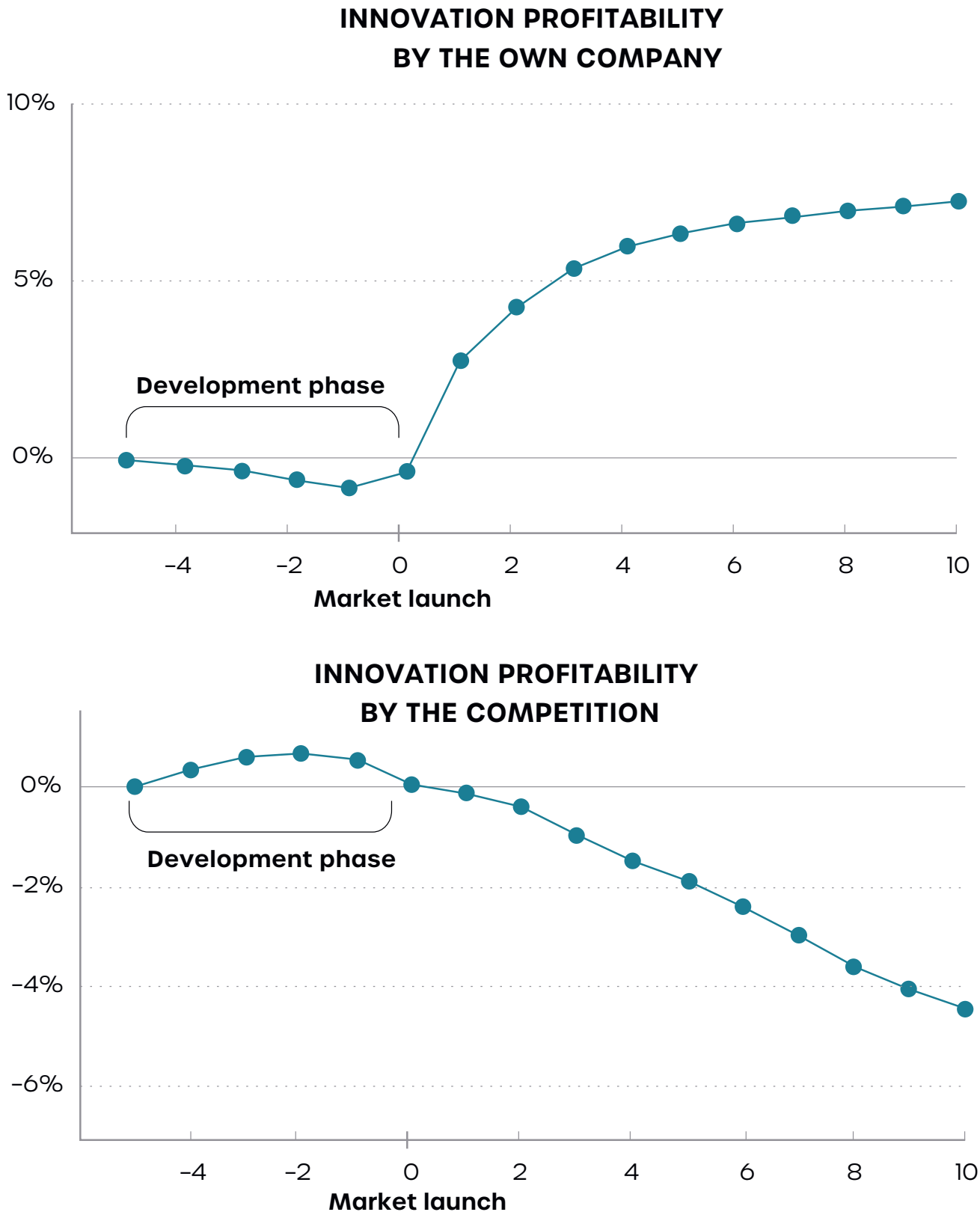


Figure 3: Profitability through innovation and competition. Source: Kogan et al. (2019).

MODERN TECHNOLOGIES AS A COMPETITIVE EDGE

Companies that use foresight activities can identify future trends and developments faster than their competitors. Foresight activities help companies identify and analyze future trends, challenges, and opportunities to make well-informed decisions and better prepare for the future. They can gain a competitive advantage by adapting their strategies and decisions. It is therefore important for companies to identify so-called general-purpose technologies (GPTs) and enabling technologies early on, as these technologies have the potential to have a significant impact on the overall economy, sales markets, and society.

GPTs are technologies that have broad applications in various industries and applications, such as semiconductor technology or the Internet. Enabling technologies allow the development and use of GPTs and are often focused on a specific application or industry. Artificial intelligence (AI) is currently an important general-purpose technology because it has the potential to change and impact nearly every industry and aspect of society. AI can help companies and organizations develop new products and services, optimize business processes, and create new business models. By identifying GPTs and enabling technologies, companies can focus their research and development efforts on technologies that offer the greatest potential for innovation and growth. Companies that invest early in GPTs and enabling technologies can strengthen their competitive position and benefit from new business opportunities. Petralia's (2020) firm-level results suggest that a ten percent increase in the number of patents in GPTs at firms is associated with an increase in operating revenue per employee of about 0.3%.

III. Innovation measurement and analysis

With our "Quality Innovation" investment style, we look for companies that are leaders in their industry and stand out for their track records of continuous innovation and introduction of new products or services into the market. The Serafin Innovation Hub, therefore, looks for companies that have a strong competitive advantage, a proven ability to innovate, and a focus on developing high-quality products or services. Companies should have a long-term vision and a commitment to invest in research and development to stay ahead of the competition.

In terms of financial ratios, we look for companies with high and stable profit margins, strong cash flows, and low debt. In addition, we favor companies that have historically increased their dividends and share buybacks, as this can be an indicator of a company's financial strength and its commitment to long-term growth.

The innovation analyses of the Serafin Innovation Hub include two core phases:

1. **Quantitative innovation efficiency measurement**
2. **Qualitative innovation detail measurement**

These core phases of innovation analysis follow the determination of the investable universe in Figure 4. Once the qualitative innovators have been identified, they are subjected to fundamental analysis in the fourth step. Here, for example, balance sheet ratios, liquidity of the securities, and their sensitivity to external factors are examined. This step serves as an additional quality assurance of the selected innovation portfolio. The Innovation Hub team is supported in this selection step by the portfolio management team and the investment team of Serafin Asset Management.

THE DIFFERENT STAGES OF THE SELECTION PROCESS: ALPORA INNOVATION EUROPE

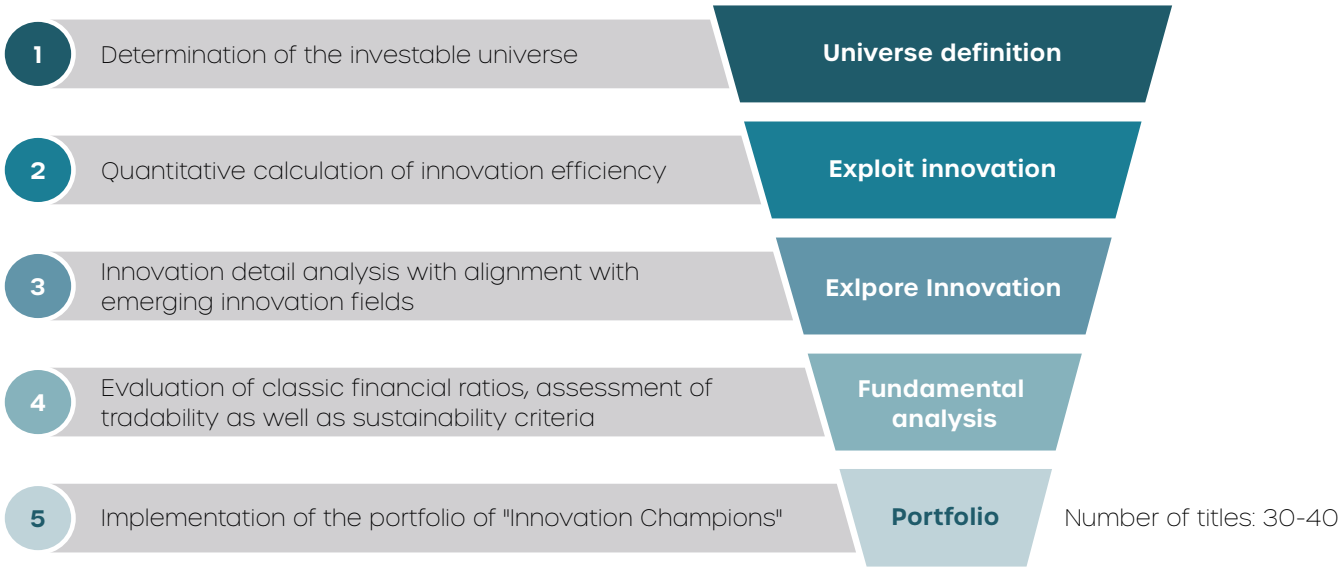


Figure 4: Structured selection process of the Quality Innovation investment approach. Source: Own illustration

III.A QUANTITATIVE INNOVATION EFFICIENCY MEASUREMENT

The innovation capability of companies is measured by comparing the input and output indicators of the innovation process using an innovation efficiency measurement. Figure 5 shows this measurement procedure and the comparison of innovation inputs (e.g. innovation expenditures) to innovation outputs (e.g. realized profits), which subsequently have a financial impact on the company.

A significant advantage is that in this way small and large companies can be considered and compared with each other in one measurement at the same time.

In the Serafin Innovation Hub, we use different models of a mathematical optimization procedure tailored to the causal idea of efficiency measurement. Since there are no uniform indicators for innovation (Adams et al., 2006) and not all of the indicators are always accessible, we use different approximations.

Moreover, it is important that the number of inputs and outputs used does not become too large relative to the number of firms considered, otherwise too many firms will be classified as maximally innovation efficient in the relative comparison.

III.B QUALITATIVE INNOVATION DETAIL ANALYSIS

The innovation efficiency measurement results in a ranking list of the most innovation-efficient companies. The top 60 companies in this ranking are then subjected to a detailed qualitative review by the Serafin Innovation Hub team.

This is about developing an understanding of the current innovation activities in the company that are not already accounted for by the input/output measurement.

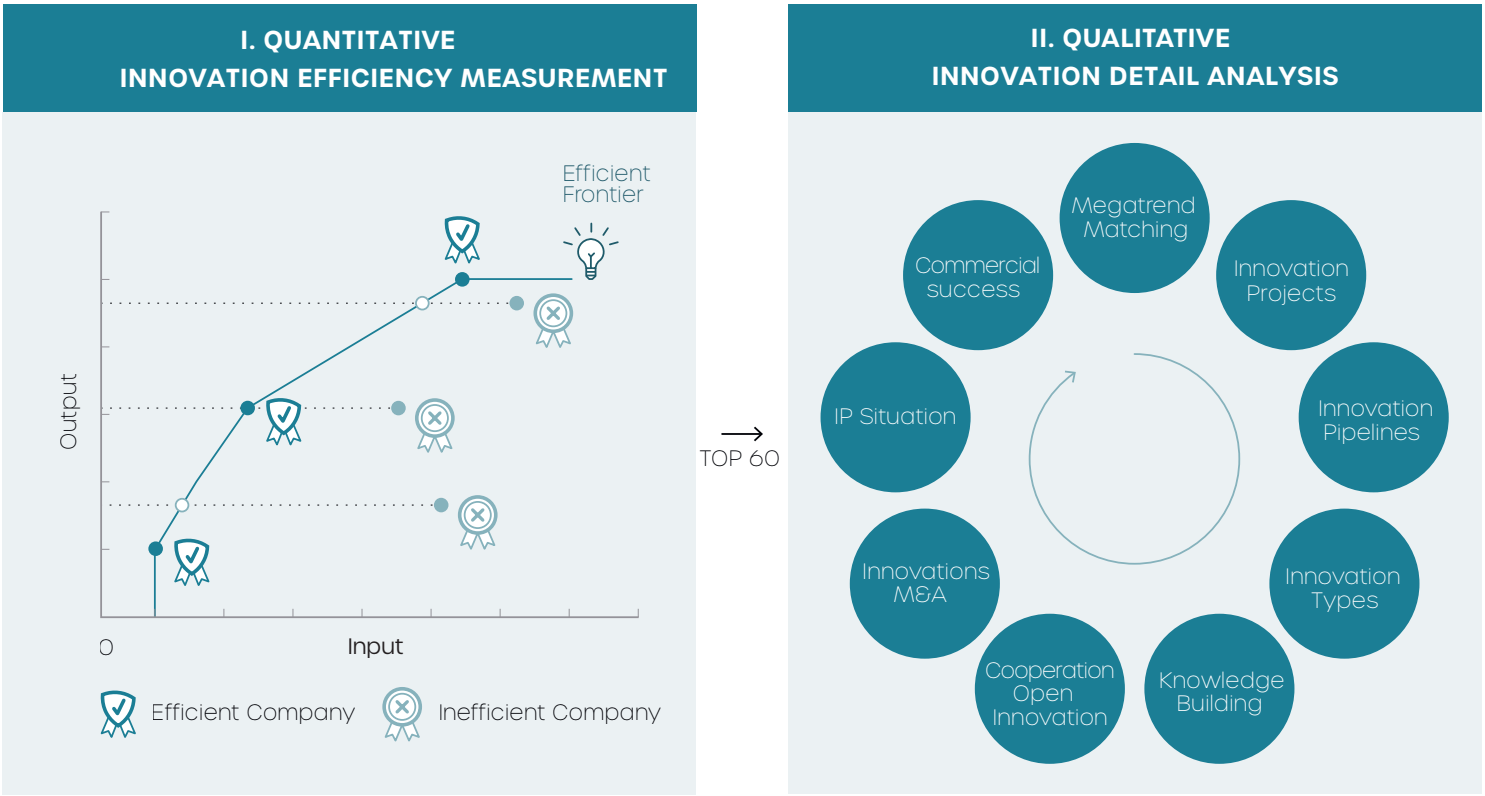


Figure 5: Quantitative and qualitative innovation detail analysis. Source: Own illustration

MEGATREND MATCHING

The Serafin Innovation Hub additionally reviews the extent to which potential portfolio candidates cover current megatrends and innovation trends and focus on general-purpose technologies and enabling technologies.

We use advanced AI-based innovation analytics tools to identify megatrends, innovation and technology trends and compare them to potential portfolio candidates. By analyzing millions of patents, company news, press releases, and financial data, we create network graphs that enable rapid and objective identification of innovation activity across a range of topics.

Using companies in the LNG market as an example, analyzing press releases and patent data through intelligent algorithms helps to better understand important companies in the field. Here, the nodes represent press releases related to LNG, while the edges represent the relationships between these releases.

In the figure below, for example, the lower left half shows several key topics that include business analyses and economic assessments of the current situation in the LNG market. Current forecasts that are specific to the LNG market can thus be easily identified. In the upper right area of the chart, the current innovation fields of Gaztransport & Technigaz can be identified. This includes, for example, new tank solutions for the transport of liquid hydrogen (shown in yellow), solutions for the transport of ammonium (shown in brown), or solutions for the so-called smart shipping sector (shown in green).

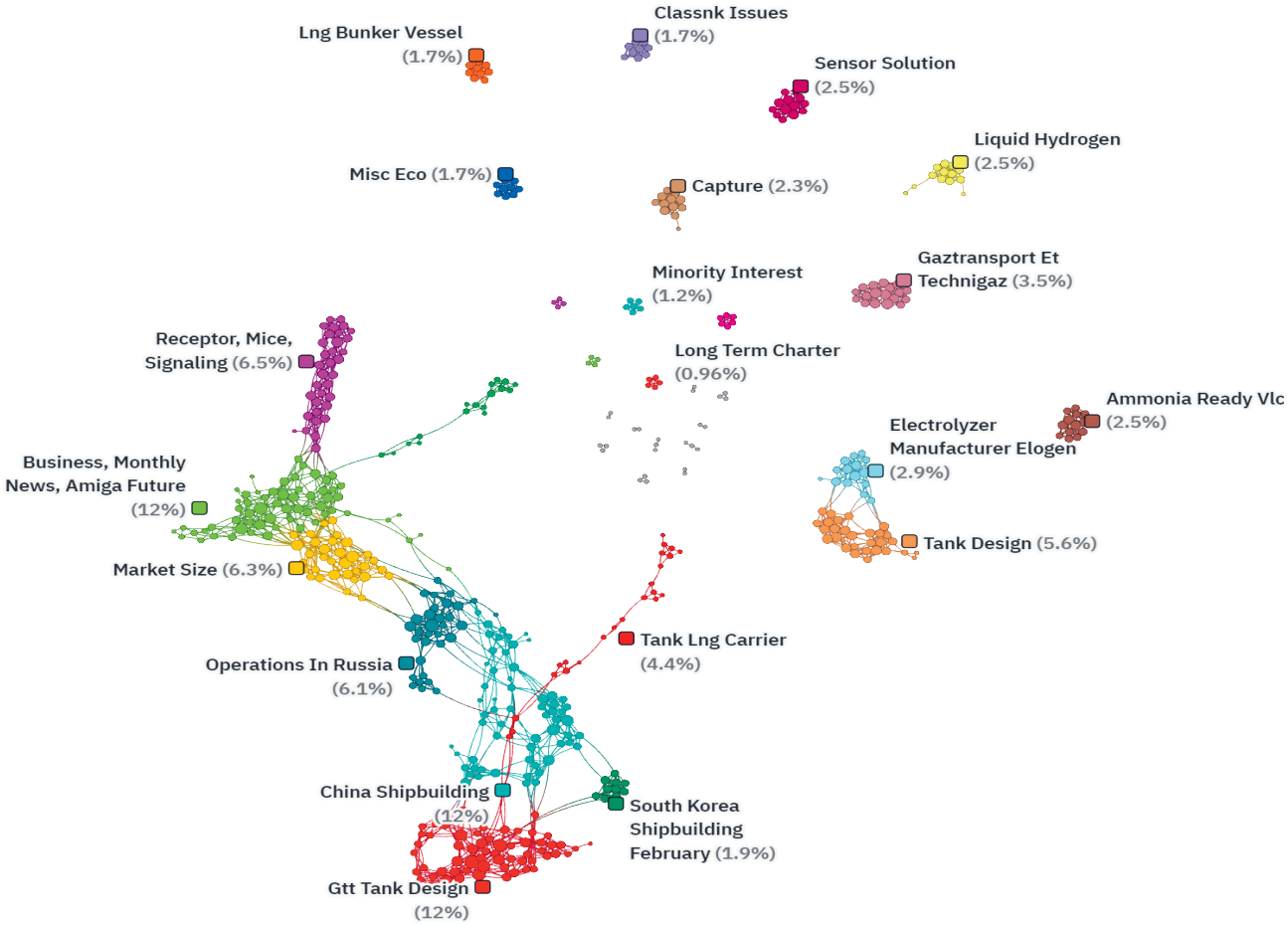


Figure 6: Illustration of news related to the LNG tank company Gaztransport & Technigaz. Source: NetBase Quid

In combination with patent data, such graph analysis can also identify a company's technological leadership. By analyzing press releases and patent data through graph theory, topics and important companies in the field of LNG can thus be better understood.

EXAMPLE RIO TINTO: AUTOMATION AND AI PART OF THE BUSINESS

For example, automation and AI are part of Rio Tinto's business. Increasing automation of trucks, drill rigs, and trains avoids control errors and improves safety. Rio Tinto's iron ore business operates the world's first fully autonomous rail system for heavy haulage - AutoHaul™ - which has traveled more than 7 million kilometers to date. Remote-controlled all-terrain vehicles and drones are used in many operations to perform risky tasks and ensure the safety of the company's employees, such as inspecting high walls in open pits and parts in large machinery. Rio Tinto has also established centers of excellence focused on analytics, automation, asset management, energy and climate change, ore deposit knowledge, underground mining, open pit mining, and processing.

In this context, Rio Tinto has developed RTVis™ - Rio Tinto Visualization - with a 3D gaming engine to give employees a better overview of their operations. They can monitor a site and retrieve detailed information they need. They can hover over an excavator, follow a transport vehicle or explore a mine. The software combines geology, geotechnics, drilling and blasting, production and planning, and visualizes features on the surface and below. There are also various analysis tools to help employees make sense of their data and information and make better decisions.

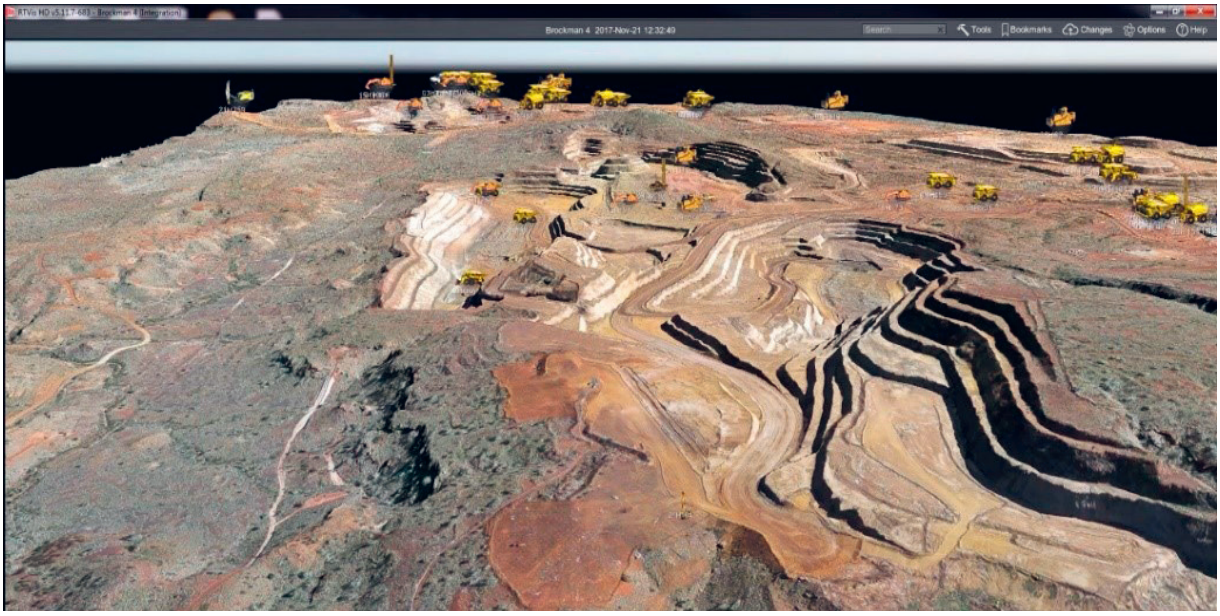


Figure 7: Rio Tinto - Visualization of a mine with live data. Source: Rio Tinto PLC

RADICAL INNOVATIONS & INNOVATION PIPELINE & INNOVATION PROJECTS

As part of our innovation analyses, we develop a precise understanding of a company's innovation projects and pipeline. An understanding of a company's incremental and radical innovation projects enables the assessment of future growth prospects.

There are many examples of companies that have misjudged radical innovation trends. For example, the Blackberry company had a dominant position in the smartphone market but could not keep up with the shift to touchscreens and app-based platforms such as Android and iOS. As a result, Blackberry lost significant market share and struggled to remain competitive, which ultimately led to a significant decline in its business. This influence of radical innovations is therefore an aspect that must be taken into account in corporate innovation analyses.

Many companies define a share within their research and development budgets that is specifically reserved for radical innovations. In the knowledge that the prospects of success of a radical innovation involve greater uncertainties, these special budgets are often even subject to other reporting requirements. After all, a radical innovation project often cannot be planned in detail at the beginning.

INNOVATION TYPES

We distinguish the following four categories in the type of innovation:

1. **Product innovations:** Product innovations refer to the creation of new products or the improvement of existing products to make them more effective, user-friendly, or environmentally friendly.

2. **Service innovations:** Service innovations refer to the creation of new services or the improvement of existing services to make them more efficient, user-friendly, or personalized.

3. **Process innovations:** Process innovations refer to the improvement of a company's internal processes to make them more effective, efficient, or environmentally friendly. Process innovations can include new technologies or new organizational concepts.

4. **Business model innovations:** Business model innovations refer to the creation of new business models or the adaptation of existing business models to make them more effective or efficient, or to develop new revenue streams. Business model innovations can include new technologies or new sales concepts.

Ideally, all types of innovation should be taken into account in the company, although the focus is usually on product and process innovations.

INNOVATION-DRIVEN M&A ACTIVITIES

Additional potential for growth and profits is provided by the right merger and acquisition (M&A) activities. M&A activities are important from an innovation perspective because they enable companies to quickly and effectively gain access to new technologies, products, and market segments that they might not be able to develop themselves or that are not available to them due to resource constraints. M&A activities allow companies to expand their innovation capacity by, for example, acquiring new technologies or taking over companies with innovative products or services. These takeovers may also allow companies to diversify their product offerings or enter new markets. Furthermore, M&A activities can help companies achieve synergy effects by pooling resources, expertise, and know-how. This can enable companies to drive innovations faster and more effectively and to coordinate their research and development activities.

Microsoft can point to a very successful M&A innovation strategy here, even though it had a major failure with Nokia (see Figure 8). Most recently, Microsoft's USD 10 billion investment in OpenAI has attracted a lot of attention.

For this reason, the Serafin Innovation Hub analyzes the M&A activities of portfolio candidates in detail. In many cases, the M&A activities provide information about the companies' future planned activities and focus areas.

Apple Inc. acquired Intel's smartphone modem business for USD 1 billion in 2019. The acquisition means that Apple is now well on its way to developing its own 5G modems for its smartphones and no longer relies on Qualcomm's hardware.

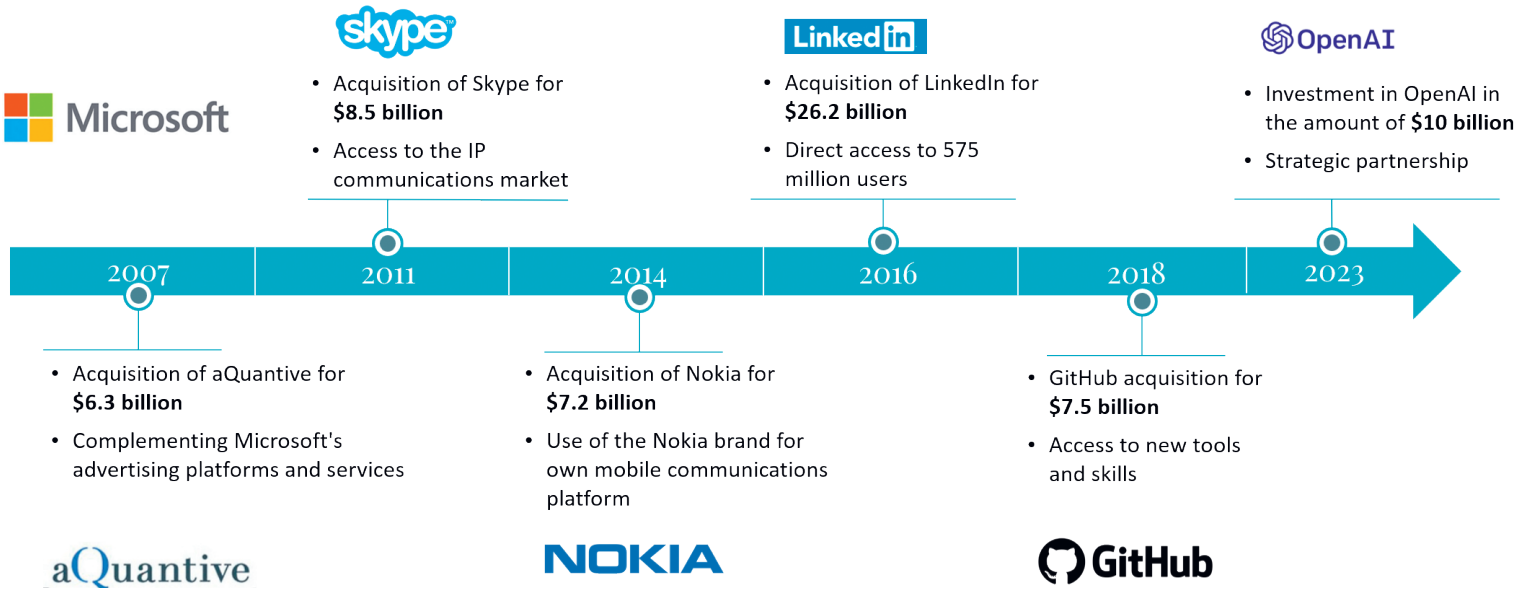


Figure 8: Microsoft's M&A activities. Source: Own illustration

PATENT POSITION

Probably one of the most important long-term protection mechanisms for profitable growth through innovation is the protection provided by patents, designs, and trademarks. The Serafin Innovation Hub evaluates the IP situation of companies based on millions of patents, which are evaluated using a specialized tool.

This makes it possible to objectively analyze and evaluate the IP situation of portfolio candidates. This involves the question of the areas in which the company patents particularly heavily, where growth or decline in patent applications can be observed, and how the patent situation is structured relative to competitors.

In practice, it is necessary to examine the extent to which „intellectual property" is also legally protected. In 2014, LPKF Laser & Electronics AG won a patent infringement case against Motorola. The dispute centered on infringement of the laser direct structuring (LDS) patent developed by LPKF. The regional court ruled that Motorola Germany and Motorola Mobility USA must stop selling patent-infringing cell phones in Germany. In addition to this, Motorola Germany was ordered to recall all patent-infringing cell phones from commercial customers.

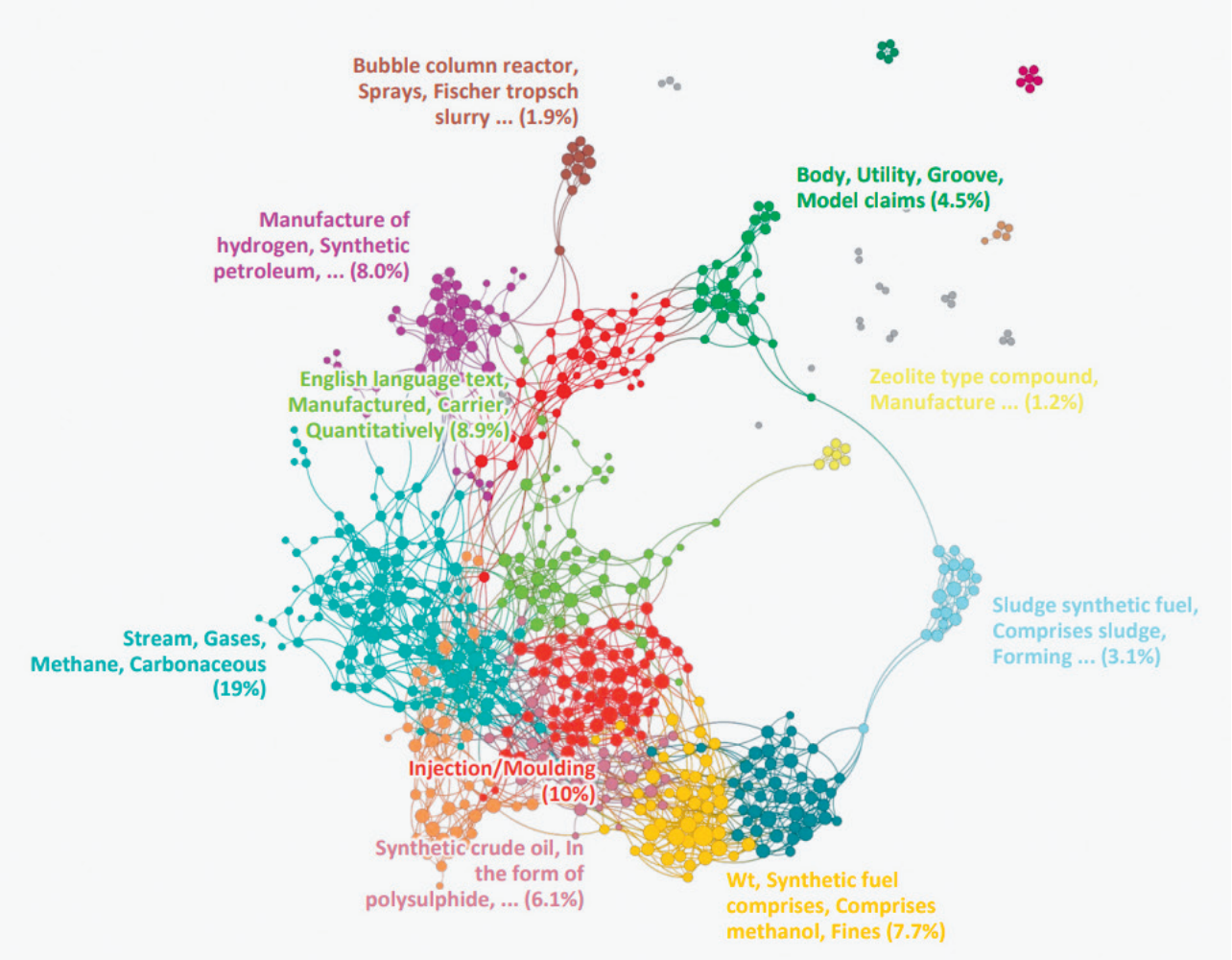


Figure 9: Analysis of patents related to biofuels and synthetic fuels. Source: NetBase Quid

KNOWLEDGE BUILDING

Innovations are based on the application of knowledge. A good innovation strategy, therefore, requires the systematic recording and management of knowledge within the company to ensure that it can be used for future developments and innovations. A company's human capital comprises the knowledge, skills, and experience of its employees. A high-quality innovation strategy requires a high level of innovative capability and creativity among employees. Companies that invest in the training and development of their employees foster a culture of learning and support the development of skills needed to implement innovations. Understanding whether companies can attract the right employees and successfully train them is therefore essential to their long-term success.

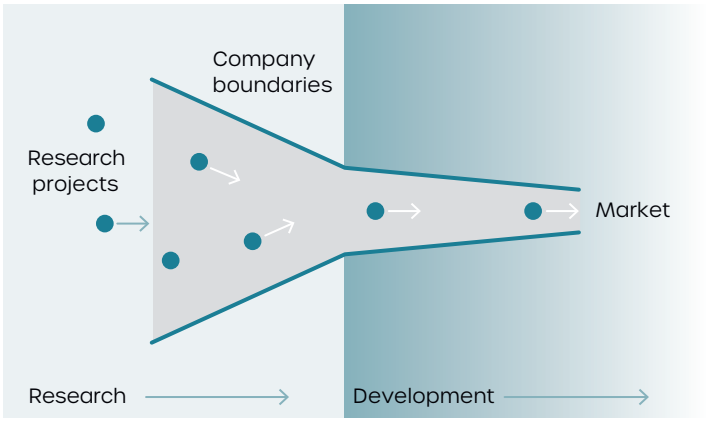
COLLABORATIONS AND OPEN INNOVATION

Collaborations and open innovation approaches help circumvent companies' resource problems by allowing them to access a broader knowledge base and develop innovations faster.

Through collaborations and open innovation approaches, companies can access a broader range of technologies and resources that they might not otherwise have. This allows them to accelerate their innovation processes and respond more quickly to changing market conditions. Open innovation approaches foster an open innovation culture where companies and organizations collaborate to develop innovations faster. This enables companies to improve their innovation capabilities and achieve competitive advantages.

Through collaborations, companies can reduce development risks by pooling resources and working together to develop innovations. For example, Nestlé works very successfully on new products and business models through collaborations and open innovation. This has led to Nespresso now being an extremely successful and profitable business unit of Nestlé.

CLOSED-INNOVATION MODEL



OPEN-INNOVATION MODEL

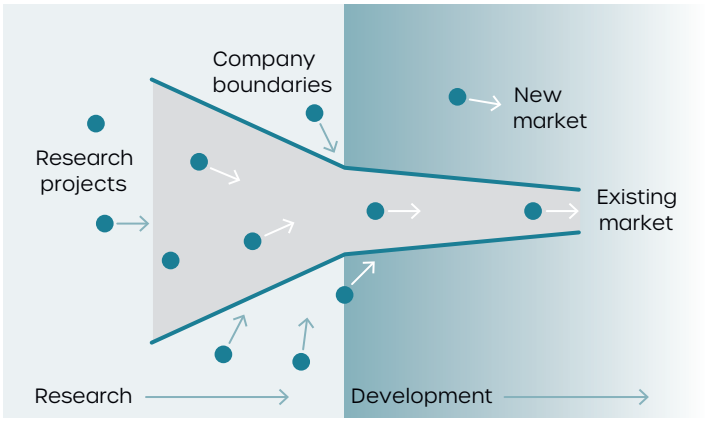


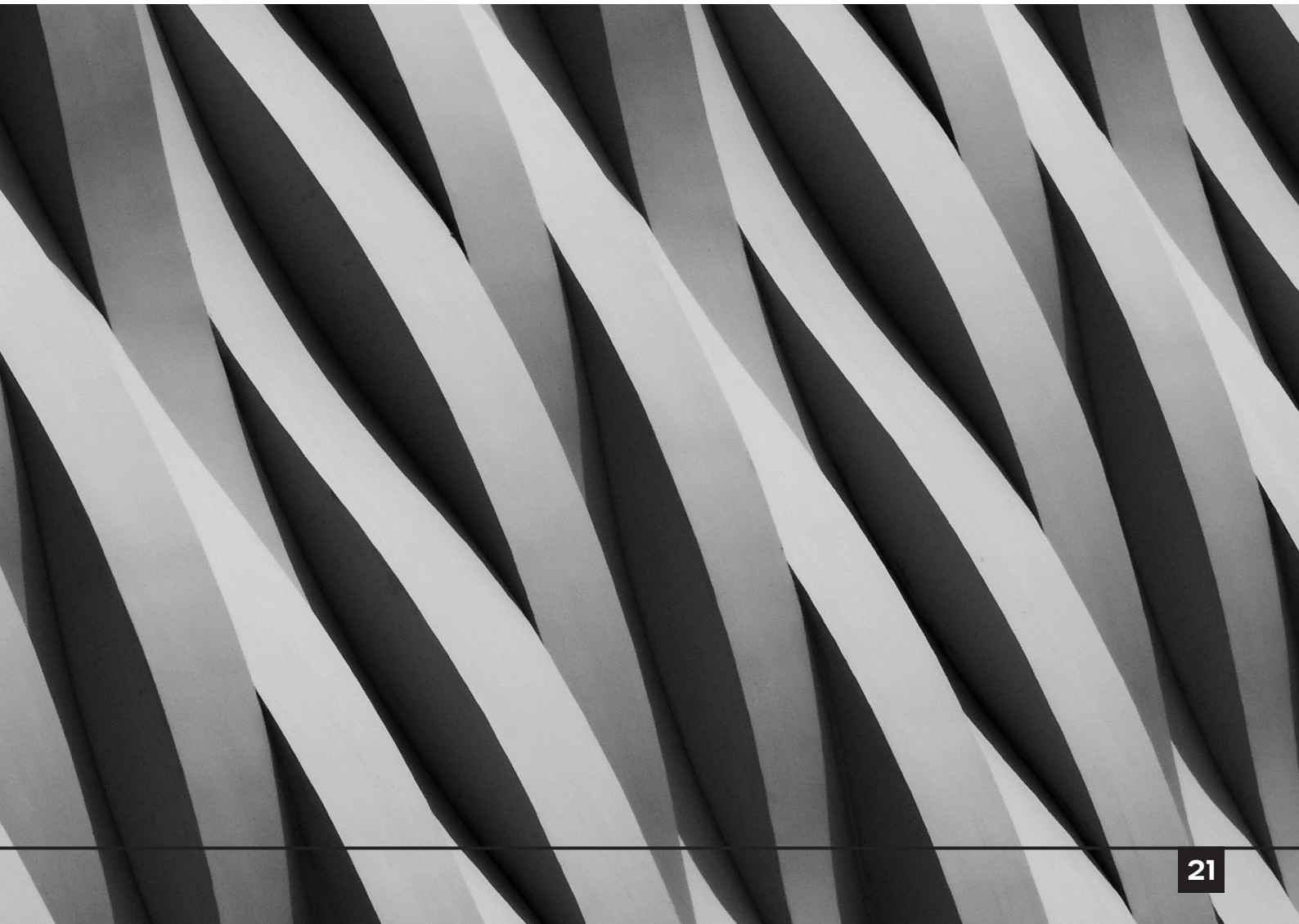
Figure 10 : Closed and open innovation. Source: Own illustration

COMMERCIALIZATION SUCCESS

If a company follows a qualitative innovation strategy and shows leadership in the above qualitative aspects, commercialization success should be evident. In a similarly designed listing of important innovation capabilities of companies, a McKinsey study showed that the better companies are in the various capability areas, the more likely it is that the companies will be economically successful in the long term.

It is probably not feasible for any company to meet all of the above criteria at once and immediately. However, a look at listed companies can provide information on which aspects should be given special attention. At least this is the opinion of the Innovation Hub at Serafin Asset Management, which is responsible for the development of innovation-focused models and the execution of related analyses. Listed companies are analyzed based on quantitative (innovation efficiency and strength) and (above-mentioned) qualitative criteria.

The resulting innovation assessment is in turn used for in-house investment products with a focus on quality innovation and shared within the company. Thus, the Innovation Hub provides assessments of the latest technology and innovation trends as well as their impact on the stock market but also enables the inclusion of the innovation factor in all investment strategies of Serafin Asset Management.



IV. Quality Innovation as an investment strategy

Companies with a focus on quality innovation can be identified by their particularly high innovation efficiency. As explained, the Serafin Innovation Hub identifies these innovation-efficient companies in a multi-stage approach.

This is based on the assumption that while the future success of innovation investments is uncertain, information about companies' past innovation success provides information about their future potential for success. These considerations suggest that investors have so far not responded sufficiently to the information contained in innovation efficiency.

If this is the case, then companies with higher innovation efficiency are undervalued compared to companies with lower innovation efficiency. Therefore, a positive correlation between innovation efficiency, future stock returns, and company performance can be expected. The innovation fund products of Serafin Asset Management also show these characteristics. Companies in our innovation funds are characterized by higher qualitative growth from both a revenue and profitability perspective (see Figure 11).

A positive relationship between innovation efficiency and return on investment can thus be established.

This is precisely the context that our "Quality Innovation" investment style exploits. We identify and select companies that, due to their high innovation efficiency, have a slower RoE decline compared to competitor companies, which are often not properly priced in by the market.

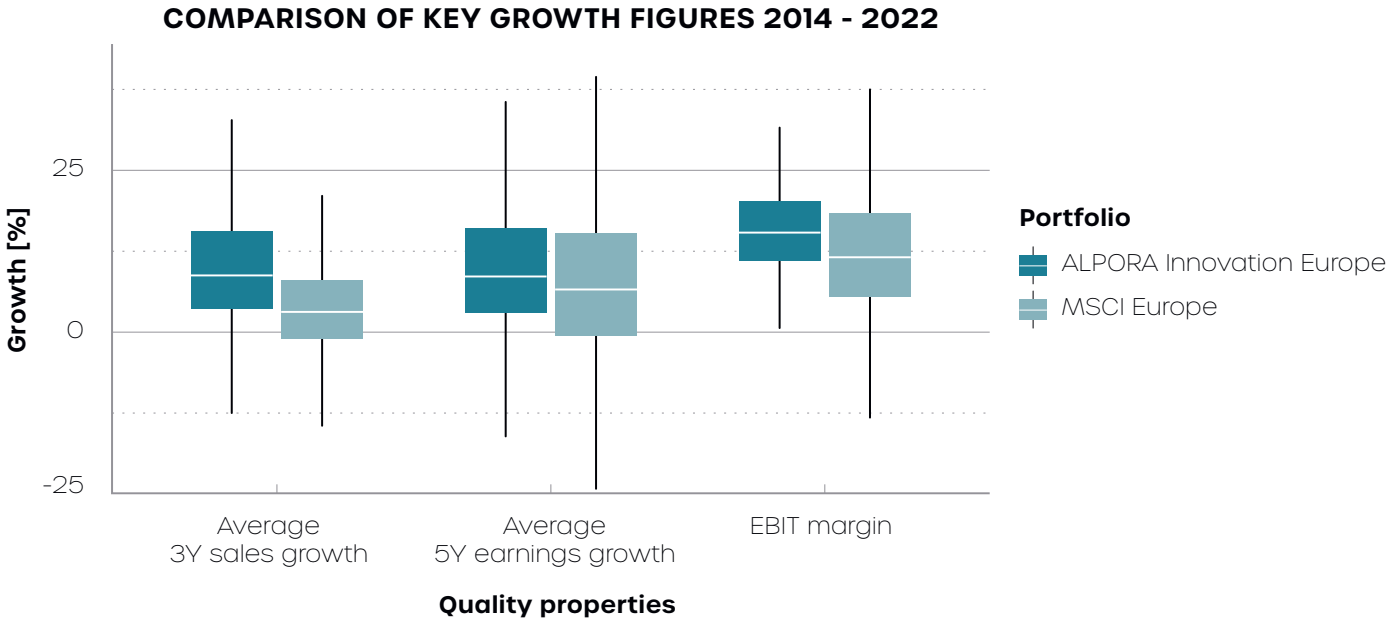


Figure 11: Growth indicators compared 2014-2022. Source: Own illustration, Bloomberg

FOR INVESTORS, THIS OFFERS THE OPPORTUNITY TO REALIZE OUTPERFORMANCE BY DELIBERATELY FOCUSING ON QUALITY INNOVATION. SERAFIN ASSET MANAGEMENT'S INNOVATION PRODUCTS HAVE BEEN SUCCESSFULLY IMPLEMENTING THIS INVESTMENT STYLE FOR YEARS!

THE SERAFIN INNOVATION HUB:

The Innovation Hub is responsible for the development of innovation-focused models and the execution of innovation analyses within the Serafin Asset Management Group. Here, the innovation efficiency and innovative strength of companies are measured quantitatively using advanced models. Furthermore, a detailed qualitative analysis of the qualitative innovators is also carried out about their future viability and coverage of relevant market and technology trends.

The resulting innovation assessment of the listed companies serves as the basis for the company's investment style Quality Innovation and the associated innovation fund products. Furthermore, the results are also made available internally for the other products, and close cooperation with the investment team of the Serafin Asset Management Group is ensured. The Innovation Hub is the competence center for innovation within the Serafin Asset Management Group and provides assessments of the latest technology and innovation trends and their impact on the equity market.

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