

Economic analysis of the IT market in Romania.

Case study for Intel Corporation

Valentin-Marius DIBLĂ¹

¹Titu Maiorescu University, Romania, Strada Dâmbovnicului Tineretului 22,
d_valentinmarius@yahoo.com

Abstract

The paper explores the IT industry in Romania, which has experienced steady and sustainable growth, according to the Employers' Association of the Software and Services Industry (ANIS). Industry value increased from €4.6 billion in 2015 to over €9 billion in 2022, contributing 7% to the country's GDP. Bucharest owns 60% of the market, followed by Cluj with 18%.

In this respect, this paper focuses on the economic analysis of a large company operating on the Romanian market, Intel. It also follows the analysis of the business from the market point of view in comparison with the other company that has a large share in the market, AMD.

Keywords: Market Research, Microprocessors, Intel, AMD, Information Technology

1. Introducere

This research examines the significant expansion of international trade in high-tech products over the past decade. The study highlights the crucial role of these products in the policies of the European Commission, especially in the context of discussions on the environment, climate, the digital future and economic stability. Eurostat's analysis shows that, between 2011 and 2021, total trade outside the EU in high-tech products increased annually by 4.9%, their share in total trade increasing from 14.7% to 18.1%. China is the EU's main import partner, while the United States dominates the EU's exports.

Eurostat data shows that total extra-EU trade in high-tech products rose from €482 billion to €777 billion between 2011 and 2021, with an average annual growth of 4.9%. Imports increased from €248 billion to €392 billion and exports from €234 billion to €385 billion, reducing the EU's trade deficit from €14 billion to €7 billion.

The study also explores the IT industry in Romania, which has registered constant and sustainable growth, according to the Employers' Association of the Software and Services

Industry (ANIS). The value of the industry has increased from €4.6 billion in 2015 to over €9 billion in 2022, contributing 7% to the country's GDP. Bucharest holds 60% of the market, followed by Cluj with 18%.

2. Main economic efficiency indicators

In order to analyze the financial situation of the Intel company, the public information on the company's website (<https://www.intc.com/financial-info/financial-results>) was used, from which the data from the balance sheet and from the profit and loss account. This information is presented in the following table:

Table no. 1: Balance sheet information and profit and loss account

- millions of euros-

	2017	2018	2019	2020	2021	2022
Balance Sheet History						
• Fixed Assets	41.109	48.976	55.386	56.584	63.245	80.860
• Current Assets	29.500	28.787	31.239	47.249	58.558	50.407
• Inventories	6.983	7.253	1.481	687	10.776	13.224
• Accounts Receivable	5.607	6.722	7.659	6.782	9.457	4.133
• Cash and Cash Equivalents	3.433	3.019	4.194	5.865	4.827	11.144
• Total Assets	123.249	127.963	136.524	153.091	168.406	182.103
• Current Liabilities	1.776	1.261	3.693	2.504	4.597	4.367
• Long-term Liabilities	25.037	25.098	25.308	33.897	33.510	37.684
• Equity	69.019	74.563	77.504	81.038	95.391	103.286
• Permanent Capital	123.249	127.963	136.524	153.091	168.406	182.103
Profit and Loss Account History						
• Net revenue	62.760	70.850	71.970	77.870	79.020	63.050
• Total operating	18.050	23.316	22.035	23.678	19.456	2.334

revenues						
• Total operating expenses	21.048	20.421	20.105	19.934	24.359	24.532
• Net income	9.601	21.053	21.048	20.899	19.868	8.017

Source: <https://www.intc.com/financial-info/financial-results>

The values of the economic and financial indicators used in this paper are presented below. These indicators were calculated based on the values from the previous table no.2.

Table no.2. The values of the economic and financial indicators

An	Indicatori de echilibru financiar	Indicatori de lichiditate	Indicatori de risc		Indicatori de profitabilitate	
	Evoluția fondului de rulment	Lichiditatea imediată	Gradul de îndatorare pe termen scurt	Rata solvabilității generale	Rentabilitatea financiară	Rentabilitatea economică
2017	82.140	12,67	0,014	4,59	13,91	7,78
2018	78.987	17,07	0,0098	4,85	28,23	16,45
2019	81.138	8,057	0,027	4,70	27,51	15,41
2020	96.507	18,59	0,016	4,20	25,78	13,65
2021	105.161	10,39	0,027	4,41	20,82	11,79
2022	101.243	8,514	0,023	4,33	7,76	4,40

Source: Own contribution

It can be observed that the working capital is predominantly positive, indicating a state of financial stability. Additionally, the value of this indicator shows the company's ability to meet its short-term obligations with the available funds.

The short-term debt ratio represents the risk of financial imbalance for the company. Investors are willing to invest in companies that have the ability to repay borrowed capital and

remunerate it according to the requirements of the financial market. It can be observed that the analyzed company has a positive trend for this indicator.

The overall solvency ratio indicates to what extent the company can cover its total debts with its total assets. This indicator shows how capable the company is of staying away from banks and creditors. For the overall solvency ratio, the minimum value is considered to be 1.4 (when the minimum share of equity in the total financing sources is 30%).

In the analyzed case, the overall solvency ratio has a value above four each year, which indicates the company's stability in terms of covering total debts with the existing total assets. The lowest value was recorded in 2020, when the overall solvency ratio was 4.20.

This is an important indicator in the analysis of the company's economic-financial performance, both in internal analysis and in evaluation by external partners. It can be observed that the analyzed company has a high profitability rate, which indicates good economic-financial performance and highlights the company's ability to generate profit using its available equity.

The economic profitability shows the profitability of the material and financial means intended to carry out the company's activity. It can be observed that the analyzed company has the rate of economic profitability with positive values, which shows the efficiency of the invested capital, of all the material and financial resources involved in the company's activity.

3. Economic efficiency forecast

3.1 Description of the mathematical algorithm proposed for the analysis of the main economic-financial indicators

One method of estimating a quantity is that of confidence interval estimation. The indication of an estimated value, isolated (punctual), cannot be considered satisfactory most of the time without references to the range of variation and the corresponding probability.

To analyze the confidence interval the confidence interval for the theoretical mean μ of a characteristic will be analyzed.

The stages to be completed will be:

Due to the fact that the analyzed sample has the number of values smaller than 30, a sample of volume n with estimates \bar{x} și s^2 is considered, then the statistic $(\mu - \bar{x})/\sqrt{\frac{s^2}{n}}$ follows a law of distribution Student with $\nu = n-1$ degrees of freedom

Calculate the confidence interval for μ with a confidence level of 0.90.

The two-sided confidence interval for the mean \bar{x} is defined by the relationship:

$$P\left(-t_{v,\alpha/2} < \frac{\mu - \bar{x}}{s/\sqrt{n}} < t_{v,\alpha/2}\right) = 1 - \alpha$$

Because the interval is symmetric, the confidence interval for μ is:

$$\bar{x} - t_{v,\frac{\alpha}{2}} \frac{s}{\sqrt{n}} < \mu < \bar{x} + t_{v,\frac{\alpha}{2}} \frac{s}{\sqrt{n}}$$

3.2 Confidence Intervals for the Previously Calculated Indicators

The confidence intervals for the six previously calculated indicators are presented in Table 3.

Table no. 3: Confidence interval

Interval de incredere	Indicatori de echilibru financiar	Indicatori de lichiditate	Indicatori de risc		Indicatori de profitabilitate	
	Evoluția fondului de rulment	Lichiditatea imediată	Gradul de îndatorare pe termen scurt	Rata solvabilității generale	Rentabilitatea financiară	Rentabilitatea economică
(-x, +x)	78.842,61 < μ < 102.882,72	7,9 < μ < 17,20	0,01 < μ < 0,03	4,65 < μ < 5,27	11,98 < μ < 29,35	6,69 < μ < 16,47

Source: Own contribution

By calculating these confidence intervals, we aimed to establish the upper and lower acceptance limits for the analyzed indicators. Thus, if the company maintains its development trajectory, the financial indicator values for the next year will fall within the calculated intervals.

4. Analysis of risks and the impact on the development of the IT industry market

As it follows from the analysis presented above, the IT industry market has the potential for growth, but that does not mean that it is not influenced by various internal and external factors that can cause the growth process to decrease.

Thus, by using the probability / impact matrix and the risk matrix, we want to analyze the possible risks of this market. For the probability/impact matrix I chose a matrix with five lines and five columns, because it is much more relevant in the current economic situation.

Thus, in the context of the previously described ones, we realized the risk matrix of the analyzed company.

Table no. 4: Matrix of Risks

No. Crt.	Risks	P	I	E	Responsible for implementing measures	Measures to prevent or correct risks
1	Realization of a marketing strategy not adapted to market requirements	5	5	25	Company management	The development of the marketing campaign by multidisciplinary teams that can better identify the market requirements will be considered.
2	Risk in human resource management Uncertainty about employee performance	5	5	25	Human resources department	The following measures will be implemented: Strategic planning, employee assessment, skills development, effective communication, introduction of anti-harassment policy, ensuring a safe and healthy work environment, introduction of clear absence and leave policies, careful assessment and selection of employees, introduction of a fair remuneration system.

3	<p>Technological risk</p> <p>The possibility that new technologies make products obsolete or cannot be integrated into the business, thereby affecting the company's performance and profitability</p>	3	4	12	Production department	<p>Consideration will be given to the development of IT Security measures, ensuring the redundancy of systems and equipment, conducting regular technology audits, training and educating employees and establishing clear and coherent policies regarding the use of technology within the company.</p>
4	<p>Production risk</p> <p>Problems with manufacturing and product quality can result in loss of product and reputation for the company</p>	4	3	12	Production department	<p>To manage production risk, the following measures will be implemented:</p> <p>Investments in equipment and technology that help improve production process efficiency, planning and monitoring of production, implementation of workforce management for staff training, diversification of suppliers of raw materials and materials, testing and inspection of products to identify and eliminate defects, implementation of a continuity plan business to minimize the impact of an unforeseen event.</p>
5	<p>Logistics risk</p> <p>Problems in supply chain management and distribution can affect the</p>	2	5	10	Department of logistics and supply	<p>The development of specific measures will be taken into account, such as careful planning and coordination of the transport</p>

	company's ability to deliver products on time					and stock of goods, the constant monitoring and evaluation of operational performances, the implementation of a tracking and inventory management system, the creation of a business continuity plan that it provides for actions and procedures, improving collaboration with suppliers and implementing state-of-the-art technologies.
6	Operational risk Human, technical or process errors can affect the efficiency of operations and profitability of the company	4	3	12	Compliance Department	The following specific measures will be applied: Implementation of an operational risk management system, development and implementation of a business continuity plan, carrying out a regular internal audit, training and training of employees, ensuring redundancy of systems and equipment, development and implementation of a continuous improvement program of processes and procedures, improvement collaboration with suppliers and business partners.

Source: Own contribution

The identified risks can put pressure on the company and, implicitly, on its development degree. Continuous analysis of potential risks and their impact on the company and on the main

economic-financial indicators is an internationally recognized path for development. Identifying a possible risk in advance leads to its significant reduction.

In conclusion, risk analysis in human resource management and general operations of a company highlights a wide range of challenges that organizations face in the current business environment. Risks such as uncertainty regarding employee performance, rapid technological advancement, production issues, logistical difficulties, operational errors, commercial changes, obstacles in project implementation, negative impact on reputation, influence of political and economic factors, financial management, interest rate volatility, price fluctuations, inflation risk, currency risks, compliance with tax rules, regulatory imposition, environmental protection, and social pressures are just a few of the challenges that companies must manage.

It is important for organizations to be aware of these risks and to develop appropriate management strategies. This involves implementing solid policies and practices regarding human resources, technology, production, logistics, regulatory compliance, financial risk management, and adopting sustainable practices.

Additionally, a proactive approach is necessary to adapt to political, economic, and technological changes, as well as to social demands and expectations. Special attention must be given to developing and implementing crisis management and business continuity plans to cope with unforeseen events.

Ultimately, risk management is an essential aspect of organizational success. By identifying, assessing, and adequately managing these risks, companies can minimize negative impact and exploit opportunities more efficiently. Adopting a proactive approach and integrating a risk management culture into all operational aspects can ensure the long-term resilience and sustainability of companies in a complex and ever-changing business environment.

5. Conclusions

From the perspective of the main economic-financial indicators analyzed, it can be observed that they are positive, indicating good progress for the company.

The main indicators analyzed have shown that Intel has an upward trend in terms of economic performance even in the current context. Thus:

- The working capital is predominantly positive, indicating a state of financial stability.

- The immediate liquidity shows the company's ability to meet its short-term obligations with the available funds.
- The short-term debt ratio shows a positive trend.
- The overall solvency ratio is above four each year, indicating the company's stability in covering total debts with existing total assets.
- The turnover duration of total assets, fixed assets, current assets, and receivables is at a low level, indicating a positive situation.
- The financial profitability rate indicates good economic and financial performance and highlights the company's ability to generate profit using its available equity.
- The economic profitability rate shows the efficiency of the invested capital, of all material and financial resources involved in the company's activity.

In conclusion, Intel is an innovative technology company that covers multiple departments, from research and development to production, logistics, and sales. The company focuses on providing high-quality products and services and constant innovation to remain competitive in an increasingly crowded market.

Regarding research and development, Intel focuses on developing new and advanced technologies to meet the needs of its customers and offer state-of-the-art products and services. The company has a strong innovation strategy and invests in scientific research to develop new technologies, such as Intel Optane, which offers superior performance for data storage.

In terms of production, Intel relies on advanced technologies and innovative processes to produce high-quality chips and processors used in various fields, including technology, communication, and the automotive industry. The company has a strong production infrastructure, involving a series of complex manufacturing processes, and its products are renowned for their performance and reliability.

Regarding logistics, Intel has a global supply and distribution network, involving collaboration with various suppliers and partners worldwide. The company relies on advanced technologies to manage its supply chains and coordinate its logistics operations, ensuring its products reach customers in a timely manner and in optimal conditions.

In terms of sales, Intel has a strong global presence and works with numerous partners and suppliers to provide products and services to its customers. The company focuses on delivering

innovative and customized solutions to its clients, aiming to strengthen relationships with them and maintain its market leadership position.

Intel has also made significant commitments to corporate social responsibility and sustainability. The company focuses on reducing its carbon footprint, using renewable energy, and developing more environmentally sustainable products. Additionally, Intel has implemented various programs and initiatives to support local communities and promote diversity and inclusion within the organization.

At the same time, it should be noted that Intel faces fierce competition from other technology companies such as AMD, Nvidia, and Qualcomm. Moreover, the global issue of the acute chip shortage, caused by the COVID-19 pandemic has significantly impacted chip and processor production and sales worldwide, including for Intel. The company has faced significant challenges in terms of raw material supply and the production process but has implemented several measures to maintain its market position.

Overall, Intel is an innovative and dynamic company that covers multiple departments and focuses on providing high-quality products and services. The company invests in the research and development of new and advanced technologies, has a strong production and logistics infrastructure, and maintains a strong global sales presence. With a robust innovation strategy and constant investments in development, Intel continues to thrive.

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