

A Work Project, presented as part of the requirements for the Award of a Master Degree Management from the NOVA – School of Business and Economics.

**EQUITY RESEARCH ON
ZEBRA TECHNOLOGIES CORPORATION –
SOFTWARE TRANSFORMATION EXPECTED TO
LEVERAGE PROFITABILITY**

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Abstract

This report analyzes Zebra Technologies, the current market leader in the Automatic Identification and Data Capture industry. The report elaborates on Zebra's strengths and weaknesses and positions them in the context of the AIDC industry. Thereby, it identifies historical, current, and future drivers and impetus for Zebra and the AIDC industry. The results are transferred into a valuation model and supplemented by quantitatively justified assumptions. Concludingly, the analysis shows that Zebra has built capabilities to maintain its leadership position in the global AIDC market and to successfully penetrate adjacent markets. The report issues a *Hold* recommendation for Zebra Technologies.

Keywords

Corporate Valuation // Corporate Finance // Zebra Technologies // Automatic Identification and Data Capture // Artificial Intelligence

This report is part of the complete Equity Research – *Is the Zebra sated or not yet?* (annexed) and should be read an integral part of it.

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ZBRA's software transformation expected to persist until 2031 // Sales forecasted based on top-down approach and triangulated from four different perspectives

Forecast and Valuation

General forecasting approach

We deploy a three-stage DCF model for the valuation of Zebra's equity consisting of a detailed forecasting period for the years 2021E to 2026F, a subsequent transitional period until 2031F, and a perpetuity for the terminal value. This approach is intended to take into account that the company, most likely, will not yet be in a steady state in 2026F due to an assumed ongoing software transformation of the business. By 2031F and thereafter, we expect a sustainable *Hardware/Software & service* sales split of approx. 75%/25% - compared to 86%/14% in 2021E. As a result, Zebra's gross margin is estimated to moderately expand during the transitional period, as the intangible business operates with richer gross margins. Going into perpetuity, we assume that the 2031F financials at the end of the transitional period can be considered a steady state. We additionally triangulate the results of the DCF analysis using relative valuation.

Revenue Forecast

Methodology: Table 1 shows the split between Zebra's inorganic and organic sales growth throughout the years including 2021E. Our sales projections 2022F-2031F are solely based on the currently existing portfolio of companies and solutions and do not include any future sales volume potentially acquired through M&A activity.

Zebra's revenues are forecasted based on a top-down approach, meaning estimating future market size and growth as well as market share development. All referenced market sizes are presented on a global scale, corresponding to Zebra's global market presence. We decided for this top-down approach due to the following reasons: 1) No explicit information is available about Zebra's product portfolio's prices, nor respective quantities sold. 2) Since Zebra is mainly selling indirectly via distributors, customers range from SMEs to large international corporates, making it impossible to estimate the average revenue per customer and hence to apply a bottom-up approach.

We estimated Zebra's revenue for the periods 2021E onwards with averaging growth rates derived out of four approaches: 1) Revenue Forecast by Products, 2) Revenue Forecast by Verticals, 3) Revenue Forecast by Industry CapEx and 4) Revenue Forecast by Management Guidance. We decided to apply four approaches to increase validity and triangulate results. Approach 1 and 2 use the following equation to estimate future revenues.

$$\text{Revenue } 202XE = \text{Market Share } 202XE \times \text{Market Size } 202XE$$

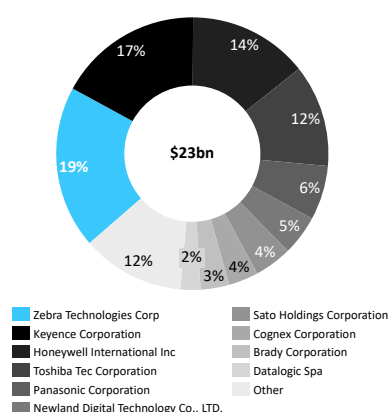
Table 1: Inorganic sales growth 2018-2021E, in % and mn. USD

	2018	2019	2020	2021E
Sales	4,218	4,485	4,448	5,625
Sales growth	13.3%	6.3%	-0.8%	26.5%
Organic growth	11.1%	5.5%	-0.9%	24.2%
Inorganic in %	2.2%	0.8%	0.1%	2.3%
Inorganic in mio. USD	83	35	3	101

Note: YoY reported inorganic growth refers to growth resulting from past 12-month acquisitions at the respective reporting date.

Source: Zebra earnings release slides and analyst estimates

Figure 1: AIDC hardware and software/MV market size 2020, in bn. USD

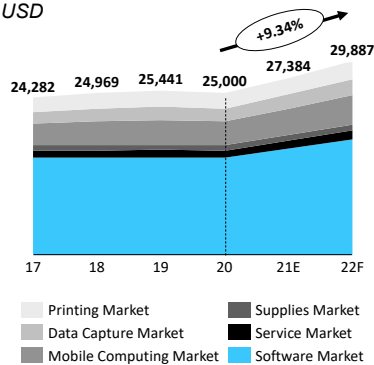


Note: Deviations to the \$25bn TAM estimated by VDC and management might stem from small AIDC- and MV-vendors, who did not publicly report 2020 revenues and were thus neglected in the market size estimation

Source: Analyst estimates, Annual reports

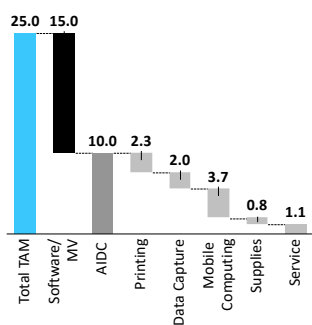
Approach 1: Market growth from product perspective at CAGR of 9.34% // Constant hardware & growing software market shares

Figure 2: Market growth projections by product category 2020 - 2022F, in mn. USD



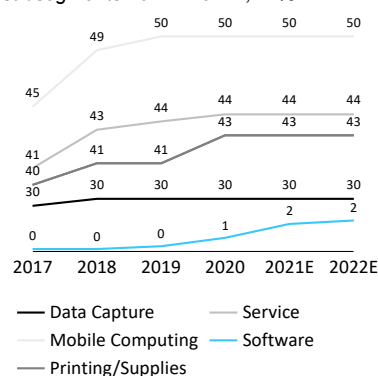
Source: Analyst estimates, VDC Research

Figure 3: AIDC market split 2020, in bn. USD



Source: Analyst Estimates, Baird & Co. (2020)

Figure 4: Zebra market shares by product subsegments 2017 - 2022F, in %



Source: Analyst estimates, Baird & Co. (2020), 1Q20 - 3Q21 earnings calls

Approach 1: Revenue Forecast by Products

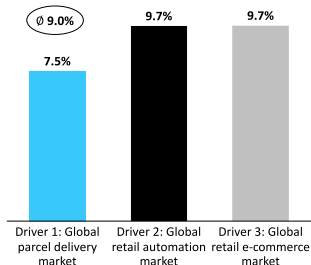
As described in the *Industry Overview* section, we divide Zebra's product offering into AIDC hardware and AIDC software. In the following, we describe our assumptions about the future market size and growth as well as Zebra's predicted market share development in each of these markets.

Market Size: Management and VDC Research estimate the AIDC hardware and software market in 2020 at \$10bn and \$15bn, respectively. As illustrated in Figure 1, we triangulated these predictions by accumulating AIDC-, MV- and supply chain software vendor's normalized revenue, and resulted in a TAM of \$23bn. Hence, VDC and management predictions seem reasonable and serve as basis for our revenue forecast. On the **hardware** side, the mobile computing market accounts for 37.3% of the AIDC hardware market and therefore represents the largest sub-market. This is followed by the printing and data capture market with approx. 22.9% and 20.3%, respectively. We support VDC's projections, that each hardware submarket will rise at a YoY growth rate of 8-12% between 2020/2021E and 2021E/2022F (see Figure 2). On the **software** side, we assume the \$15bn AIDC software market to grow as the weighted average growth of the global workforce solution and supply chain solution markets. Combined, with the \$10bn heavy AIDC hardware market projections, this results in a CAGR of 9.34% from 2020 to 2022F (see Figure 2). This projected growth increase seems reasonable to us: Covid-19 increased the pressure on supply chains to 1) digitize their operations and to 2) enhance their front-line workers' productivity. To remain competitive and keep up with the pandemic induced digitization dynamic, we predict that retailers, manufacturers, hospitals, and T&L corporations will catch up their in 2020 decommissioned AIDC investments and increasingly invest in 2021E and beyond.

Market Shares: As illustrated in Figure 4, Zebra positions itself as the market leader in the three largest AIDC **hardware** sub-markets by holding 50%, 43%, and 30% market share. The historical development of Zebra's market shares clearly shows that Zebra has gained momentum in the market. Especially the favorable development of Zebra's market share in the mobile computing segment from 45% in 2017 to 50% in 2020 is driven by Zebra's superior handling of the Windows-Android system migration. Nevertheless, since competition is steadily increasing, especially from Honeywell, we do not expect Zebra to gain further market shares in our base case. Thus, hardware market shares are kept constant at their 2020 levels for the forecast period. On the AIDC **software** side, Zebra increased its market share from 0.3% to 0.9% due to recent software acquisitions from 2019 to 2020. Management announces for instance in the 4Q20 Earnings Call, that the Reflexis business grew at around 50% since the acquisition (Zebra Technologies

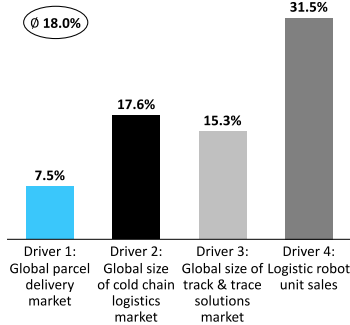
Approach 2: Market growth from vertical perspective at CAGR of 8.29% // Constant vertical hardware & growing software market shares

Figure 5: CAGR of retail market drivers 2020 - 2026F



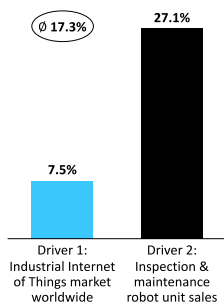
Source: Statista, Transport Intelligence, and Logistics Management (2021), Statista and Allied Market Research (2021), Statista and eMarketer (2020)

Figure 6: CAGR of T&L market drivers 2020 - 2026F



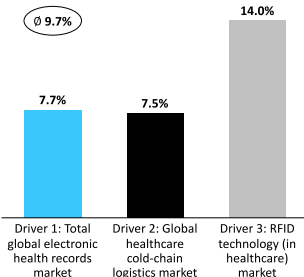
Source: Transport Intelligence, Logistics Management, and Statista (2021), Allied Market Research (2020), Statista and The Insight Partners (2019), IATA et al. (2021), IFR (2020)

Figure 7: CAGR of manufacturing market drivers 2020 - 2026F



Source: IFR (2020), Statista and Markets and Markets (2020)

Figure 8: CAGR of healthcare market drivers 2020 - 2026F



Source: Statista and VMR (2018) Statista, PR Newswire and Global Industry (2021), Statista and Grand View Research (2018)

2020b). We predict this gain in software market share to keep rising to 2.0% in 2022F, due to Zebra's 1) cross-selling capabilities and 2) extensive partner network. As a result, approach 1 results in revenue growth predictions of 12.6% for 2021E and 11.1% for 2022F (see Table 2).

Approach 2: Revenue Forecast by Verticals

Based on the analysis provided in the *Industry Trends by Verticals* section, we identified trends and drivers for each of Zebra's operating vertical markets. In the following, we describe our assumptions about how these drivers influence each vertical's future market growth.

Market Size: We expect the **Retail** AIDC hardware market growth to be driven by the 1) global parcel delivery market, 2) global retail automation market and the 3) global e-commerce market (see Figure 5). Most notably, the e-commerce and the BOPIS market experienced high growth of more than 14% during the pandemic due to safety and social distancing regulations as well as the increasing convenience needs of shoppers. This results in an increased need of retailers to equip front-line workers with mobile computers, barcode and POS scanners (Insider Intelligence 2021). Buyers are expected to maintain this trend, although with a high single-digit CAGR from 2021E to 2026F. The **T&L** AIDC hardware market is accelerated by drivers shown in Figure 6. Especially sales of logistics robots, analogous to the Fetch Robotics product offering, experienced drastic growth of more than 50% in the Covid-19 era as logistics companies increasingly digitized their supply chains to better address labor shortages. To precautionary stabilize supply chains, companies are forecasted to invest less aggressively but steadily in robotics in 2022F+. We predict the **Manufacturing** AIDC hardware market to be driven by investments in IoT and autonomous mobile robots (see Figure 7). Again, especially in times of Covid, where production orders pend up, fixed industrial scanners and robotics assisted in reducing production bottlenecks. Strong growth is also predicted in the **Healthcare** AIDC hardware market. The market is predicted to be driven by the 1) global electronic health records market (e.g., resulting in increased demand for data capture), 2) global healthcare cold chain logistic market (e.g., resulting in increased demand for thermal printers and labels) and 3) RFID healthcare technology market (see Figure 8). **Other** AIDC hardware markets such as the governmental sector are predicted to be driven by, among others, military logistics investments translating into a higher demand for (rugged) mobile computers or tablets. The AIDC software market is assumed to grow similar to approach 1. Combined, the projected growth rates result in an overall CAGR of 8.29% from 2020 to 2026F (see Figure 9).

Approach 3: Historical Industry CapEx and ZBRA's vertical sales seem to be aligned // CapEx perspective indicates growth of 20.2% for 21E and 4.6% for 22F

Figure 9: Market growth projections by verticals 2020 - 2026F, in mn. USD

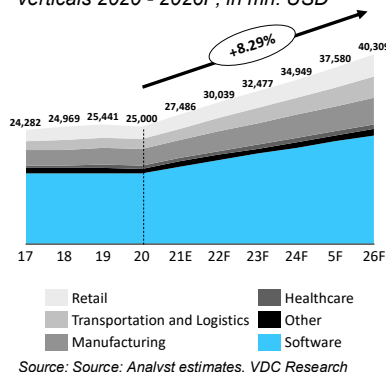


Figure 10: Zebra's market shares by vertical 2017 - 2026F, in %

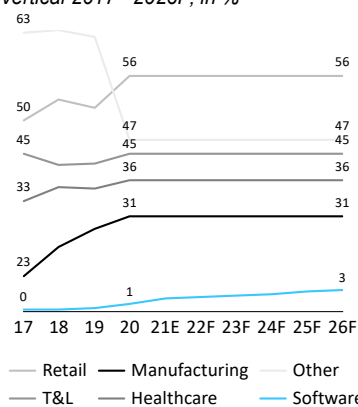
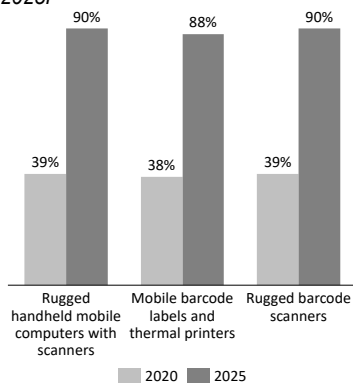


Figure 11: Survey about adoption rates of selected AIDC products 2020 vs 2025F



As plausibility check, we triangulated the projected market sizes derived of approach 1 and 2 in two ways: First, we compared the projected market sizes derived by the two approaches (see Figure 2 and Figure 9) and observed only minor differences of 0.37% for 2021E and 0.5% for 2022F. Second, we compared the growth rate results per vertical with Zebra's internal estimates about adoption rates of AIDC products: According to a study among 5,400 consumers and industry experts (Manufacturing, T&L, Wholesale and Retail), as of 2020, 39% of the respondents did not adopt rugged handheld mobile computers. As of 2025F in contrast, the adoption rate is predicted to be 90%. The survey results illustrated in Figure 11 evidently confirm, that as of 2021, the market is not even closely saturated and there is still additional room for product adoption and reasonable growth.

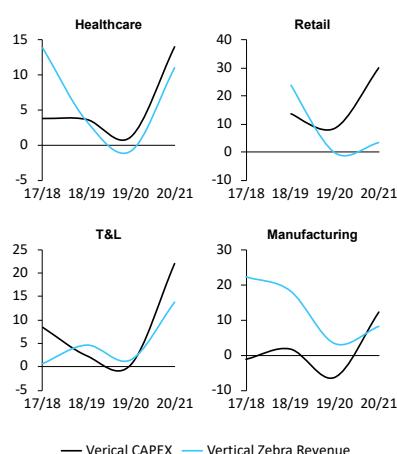
Market Shares: As illustrated in Figure 10, Zebra claims 56%, 45%, 31% and 36% market share in 2020 in the AIDC Retail, T&L, Manufacturing and Healthcare hardware industries, respectively. Similar to the reasoning of approach 1, we expect Zebra not to be capable of gaining further market share due to increasing competition, especially from Honeywell and Toshiba TEC. Hence, we assume Zebra's market shares to stay stable at the 2020 levels in each vertical, but account for the scenario of declining market shares in the *Scenario Analysis* section. Similar to approach 1, we predict the AIDC software market share to rise from 0.9% in 2020 to 3.0% in 2026F.

Approach 3: Revenue Forecast by Industry CapEx

Approach 3 entails the hypothesis, that an increase in industry CapEx could have an effect on Zebra's revenue. Although only a limited amount of data points available, we plotted the YoY growth of each vertical's revenue growth against the respective industry CapEx YoY growth. As Figure 12 shows, the variables seem to behave similar for the period 2017-2021E. Hence, we considered the industry CapEx growth as reasonable proxy for future market growth. According to S&P's Global Corporate CapEx study, the CapEx in the retail industry is forecasted at a YoY growth rate of 25.6% and 7.8% for 2021E and 2022F, respectively (T&L 2021E: 22%, T&L 2022F: 3%, Manufacturing 2021E: 12.3%, Manufacturing 2022F: 3.3%, Healthcare 2021E: 14%, Healthcare 2022F: -1%). Consequently, approach 3 results in a vertically combined revenue growth rate prediction of 20.2% for 2021E and 4.6% for 2022F (see Table 2).

Approach 4: Longer term revenue growth 5% // Combined: Extraordinary revenue growth in 21E due to Covid, moderate growth until 26F and constant growth as of 27F+

Figure 12: Zebra's YoY vertical revenue growth plotted against YoY vertical CapEx growth 2017 - 2020, in %



Source: S&P Global (2021), 1Q20 - 4Q20 investors presentations

Table 2: Combined weighted revenue growth rates 2021E - 2031F

	DP						TP
	2021E	2022F	2023F	2024F	2025F	2026F	2027F+
Approach 1	12.6%	11.1%					
Approach 2	13.7%	11.2%	10.0%	9.4%	9.7%	9.8%	
Approach 3	20.3%	4.7%					
Approach 4	26.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Weighted GR	26.5%	9.9%	7.5%	7.2%	7.4%	7.4%	5.0%

Source: Analyst estimates

Approach 4: Revenue Forecast by Management Guidance

The fourth approach considers the revenue growth projections given internally by the management. In the short term, 12% QoQ growth is guided for 4Q21E, whereas in the longer term, management's growth guidance amounts to 5% YoY.

Combined Revenue Forecast

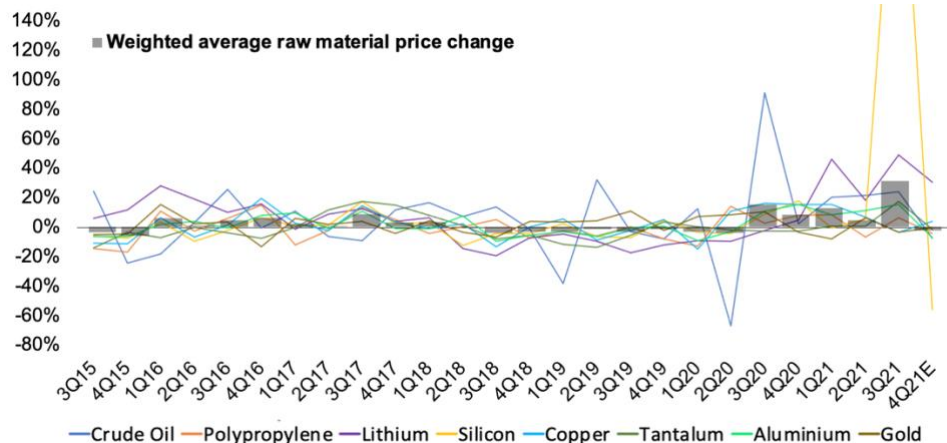
Our final revenue growth estimates are calculated as a weighted average of the growth rates resulting from each of the four approaches. For 2021E, we rely on sales growth between 1Q21 - 3Q21, supplemented by management's sales growth guidance for 4Q21E. For 2022F, we assume a weighted average growth of all four approaches: The validity of the market growth rates predicted by VDC as one of the leading research centers in the field of AIDC, as well as our reasonable assumptions of stable hardware market shares and increasing software market shares derived from our *Competitive Landscape* sections, make us confidently weight the growth rates of approach 1 and 2 for 2022F with 40%. Approach 3 and 4 are weighted equally with 10%. For the rest of the detailed forecast period 2023F - 2026F, we equally weight the growth rates of management's guidance and our vertical forecast approach. For the transitionary period 2027F - 2031F, we align the revenue growth with management's longer term growth guidance of 5%. For the subsequent growth in perpetuity, please refer to the section *DCF Valuation*. By combining the growth rates of all four revenue forecast approaches, we result in final growth rates illustrated Table 2. We further adjust the weighting of the four approaches in the *Scenario Analysis* section and discuss resulting changes on our target share price.

Supply chain issues
depressing margins // Further
surging commodity prices and
longer-term premium freight
costs as major risks to
profitability

Free Cash Flow Forecast

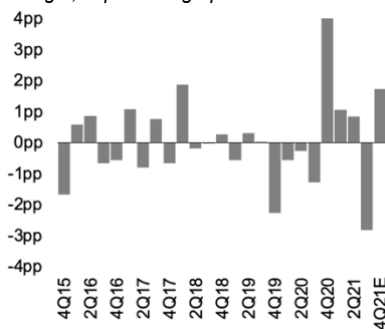
COGS and Gross Margin: As there are no indications that Zebra's manufacturing outsourcing strategy is subject to change, COGS mainly consist of charges for raw materials and manufacturing services from Zebra's production partners. While a certain fluctuation of commodity prices can be considered normal, raw materials in general and specific materials relevant for the production of Zebra's products have experienced substantive price increases throughout the last year. While price increases were particularly strong between 3Q20 and 3Q21, we see price pressure easing very recently (see Figure 14). Figure 13 shows quarterly price fluctuations of selected commodities as lines and the weighted average change of Zebra's most relevant raw materials as bars.

Figure 13: QoQ price fluctuations of selected commodities relevant for Zebra (lines); averaged (bars)



Source: Bloomberg, Analyst calculations

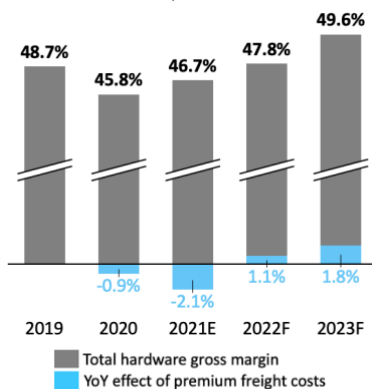
Figure 14: QoQ change of Zebra gross margin, in percentage points



Source: Quarterly reports and analyst estimates

Note: Past 25 quarters correlation coefficient between commodity price change Q_t and Zebra hardware gross margin in the subsequent quarter Q_{t+1} : 0.515. Hardware gross margin adjusted for premium freight costs in 2020-2021E to avoid distortion.

Figure 15: Zebra hardware gross margin and impact of changes in premium freight costs 2019-2023F, in % of sales

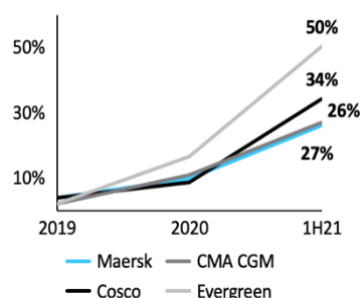


Source: 2021 earnings calls slides and analyst estimates

The comparison between quarter-over-quarter (QoQ) commodity price changes and Zebra's subsequent QoQ hardware gross margin changes in percentage-points (see Figure 13) did not yield a negative correlation. This might be explained with long-term manufacturing service contracts, commodity price hedging, and quantity effects in 2021. While one would expect a strong negative relationship between the two metrics, the actual correlation coefficient between the last 25 quarters average commodity price and gross margin volatility amounts to 0.515. However, management referenced in recent earnings calls that the company is incurring higher costs for components from their suppliers. To compensate for that, Zebra raised product prices for customers as of Sep 2021 (Zebra Technologies 2021b). This indicates that the company is generally able to hand along price increases to customers. Management expects product price increases to largely offset higher input costs (Zebra Technologies 2021c). Even though Zebra was able to pass along price increases to customers twice in less than two years, we expect a potential third price increase in the near future to be hardly realizable. Consequently, further surging commodity prices bear a significant risk for Zebra's

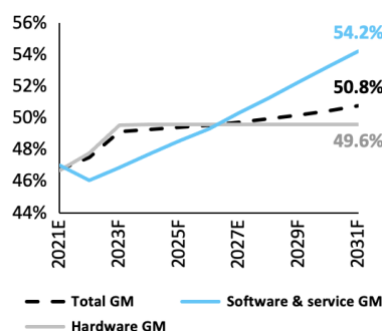
Software transformation expected to pull-up gross margin to nearly 51% by 2031F // SG&A expenses to level off at 14.9% of sales

Figure 16: EBIT margin development of selected global shipping companies 2019-2Q21, in % of sales



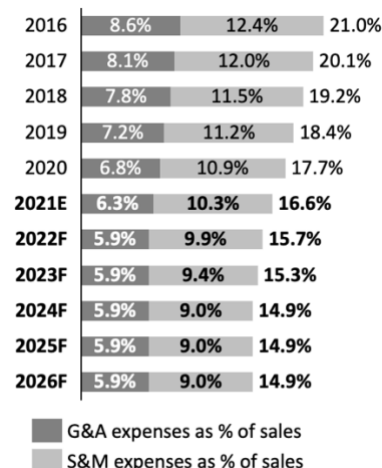
Source: Annual and interim reports

Figure 17: Forecasted gross margins, total and by tangibility 2021E-2031F



Source: Analyst estimates

Figure 18: SG&A expenses 2016-2026F, in % of sales



Source: Annual reports and analyst estimates

profitability. The pandemic induced supply and demand imbalances in the global logistics markets led to premium freight costs with significant impact on Zebra's hardware gross margin (see Figure 15). As both, sea and air freight rates have been surging further recently, we expect premium freight expenses to peak in 4Q21E, stay on a high level in the first two quarters of 2022F and start to decrease as of 3Q22F. As logistics providers will likely try to preserve a portion of their currently elevated margins (see Figure 16), we expect slightly higher freight costs than before the pandemic for 2023F and the following years. Even though frictions on the cargo markets should be settled by then. For 2024F onwards, no further hardware gross margin changes are anticipated. Nevertheless, we address the risk of persistent commodity price increases and peaking freight costs on margins in our *Scenario Analysis*.

While the gross margins in the software (69%) and service (34%) businesses per se are not expected to change significantly, we expect the combined *Software & service* gross margin to expand substantially by a steadily increasing software intensity of Zebra solutions and therefore a higher share of software revenue. The *Software & service* gross margin experienced strong structural growth of 12.3pp from 34.4% in 2019 to 46.7% in 2021E through Zebra's software acquisitions and accelerated digitization pressure on customers in its main verticals. Before further growing up to 54.2% until 2031F, *Software & service* gross margins will experience a slight dip in 2022F, as lower margin service sales fully recover from lows during the pandemic times. Figure 17 shows both segment gross margins as well as Zebra's total gross margin over the course of the years 2021E-2031F. Coming from a 86%/14% split between *Hardware* and *Software & service* sales, the software transformation of the business model is expected to result in a sustainable sales split of 75%/25%, pulling Zebra's combined gross margin up to 50.8% in the steady state.

SG&A expenses as a percentage of sales, consisting of selling and marketing (S&M) as well as general and admin (G&A) expenses, have been continuously decreasing over the course of the last 5 years, both aggregated and on a standalone basis (see Figure 18). S&M expenses as percentage of sales decreased by 0.4pp on average every year whereas G&A expenses decreased by 0.35pp. As the company's operations have been streamlined and cost-cutting programs were in place, we believe that future fix-cost degression in SG&A will not be possible on the same levels we saw in the past years. However, given management's focus on cost discipline, we expect SG&A as percentage of sales to have potential to moderately decrease further over the next two years and reach a steady state as of 2024F. We do not believe that absolute SG&A expenses can

Effective tax rate expected to increase substantially // NOPLAT growth currently accelerating but slowing down in transitional period

decrease as the business is growing substantially. In absolute terms, Zebra's SG&A expenses are forecasted to be \$912m in 2021E, breach the level of \$1bn in 2023F and grow to \$1.6bn by 2031F.

R&D: As we expect competition in the AIDC industry to stay high and Zebra is targeting new adjacent markets, R&D activity remains crucial for success. Therefore, we expect Zebra to invest in solution enhancement and product development at a level of 10.2% of sales, which is in line with prior years.

Debt: Given the fact that the management feels comfortable with the current level of outstanding debt in the form of term loans and the fact that major debt proceeds in the past have been linked to the Motorola acquisition, we expect Zebra to continue to operate at the current debt level. Hence future interest expenses are projected to be in line with 2021E. However, debt from lease liabilities is expected to scale with revenues. As a result, we see a nearly constant net debt to EV over the course of the next years.

Figure 19: Zebra's tax rates 2019-2026F, in % of pre-tax income

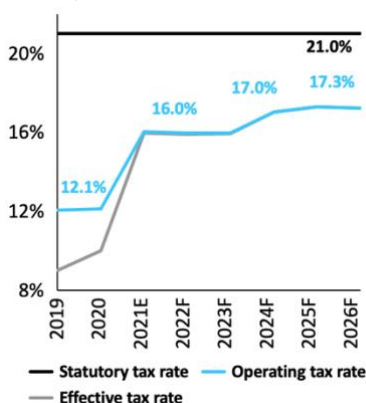
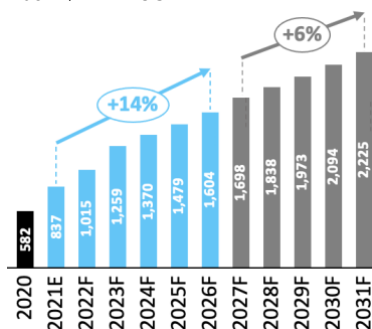


Figure 20: NOPLAT development and CAGRs for different growth periods 2020-2031F, in mn. USD

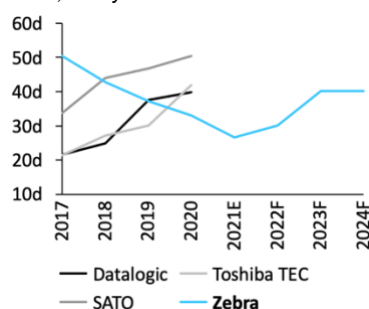


Taxes: As shown in Figure 19, Zebra's effective tax rate had a spread of up to 12pp to the 21% corporate statutory rate in the United States. The operating tax rate, was significantly closer to the statutory rate. The primary sources for the discrepancy between statutory and effective tax rates in the past were lower tax rates in foreign jurisdictions, equity compensation that is partially deductible for CIT purposes, and federal R&D tax credits. Nevertheless, equity compensation deductions and R&D tax credits are expected to be persistent in the future. With profits growing, we expect Zebra's tax rate to gradually increase over the years to a sustainable level of 17.3% in 2026F mainly because of two factors: First, we expect the foreign rate differential to substantially decrease over the mid term, as a special agreement with the Singapore government, including a 11% instead of 17% tax rate, will cease 2024F. Also, tax rates in the major foreign jurisdictions of Zebra, namely England and Luxembourg, are 19% and 25%, respectively. Second, we expect the recently stipulated global minimum tax rate of 15% to be enacted by the U.S. government in 2022F. Therefore, we estimate a slightly higher impact from U.S. taxation of foreign earnings on Zebra's tax rate in the future.

NOPLAT: As illustrated in Figure 20, NOPLAT is expected to grow with a CAGR of 14% during the detailed forecast period and with a 6% CAGR throughout the transitional period due to the following assumptions: 1) Strong anticipated revenue growth 2) gross margin changes and improvements over all forecasting periods, 3) positive fixed-cost effects in SG&A, but 4) offsetting higher operating tax rates.

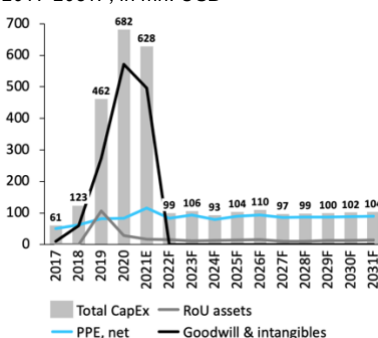
Cash conversion expected to decelerate again // Non-financial CapEx to increase with higher growth of the overall business

Figure 21: Cash Conversion Cycles 2017-2024F, in days



Source: Analyst calculations based on annual reports and own projections

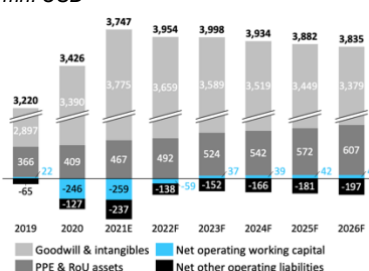
Figure 22: Total CapEx and by component 2017-2031F, in mn. USD



Note: Right-of-use lease asset change in 2019 distorted by initial on-balance recognition due to adoption of U.S. GAAP ASC842.

Source: Analyst calculations based on annual reports and own projections

Figure 23: Operating Invested capital, total and by component 2019-2026F, in mn. USD



Source: Analyst estimates

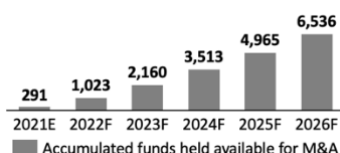
Zebra's cash conversion cycle (CCC), has experienced continuous improvement throughout the past years and started outperforming the competition's cycles in 2018 (see Figure 21). The CCC decreased by 23 days from 50 days in 2017 to only 27 days in 2021E. However, on the long run we do believe Zebra's CCC will drop back to a sustainable level of 40 days. This is due to the following factors: 1) 2020 was characterized by extraordinarily high expense accruals and revenue deferrals, both induced by the pandemic and 2) in 2021E and 2022F inventory is distorted through the current supply chain disruptions. Thus, for future periods we expect a slightly negative impact on free cash flows from working capital investment requirements compared to the current positive contribution during the pandemic (see also Figure 23).

In the *Financial Analysis* section, we have shown that the business historically could grow at 5%-10% YoY without overly investing in PPE, due to its manufacturing outsourcing policy. The high level of CapEx from 2018 to 2021E was caused by bustling M&A activity. However, since acquisition related Goodwill and intangibles are nearly impossible to forecast, we do not project cash outflows relating to those items nor incorporate future cash inflows from potentially acquired sales volume in our forecast. Forward looking, we expect non-financial CapEx, meaning CapEx without Goodwill and intangibles, still to be moderate but at a slightly higher level compared to prior years (see Figure 22). This is reasoned by the facts, that 1) 2021E is expected to yield extraordinarily strong sales growth and 2) our overall mid-term growth estimates are higher than the sales growth before the pandemic. While yearly net PPE investments averaged \$79m throughout the 5 years preceeding the pandemic, we project an average of \$91m for 2022F-2031F. Moreover, we expect additional operating leases for distribution centers, equipment and sales offices to contribute additional \$14m yearly to non-financial CapEx in the forecasting period. The increase in non-financial CapEx is connected to higher Furniture, Software, Office and Computer Equipment expenses as well as higher cost in connection with leasehold improvements. Depreciation expenses are estimated to amount to \$74m per year.

Operating invested capital, characterized by high intensity of Goodwill and other intangible assets, climbed considerably from 2019 to 2021E due to large value M&A deals (see Figure 23). This growth was partially offset by negative operating working capital and other operating liabilities due to the pandemic, as elaborated upon above. As a result of constant Goodwill for valuation purposes, Zebra's moderate CapEx investments and continued working capital management efforts, we expect only a slight increase in operating invested capital from \$3,747m in 2021E to \$3,814m in 2031F.

Share repurchases continue to create value for shareholders // Nearly constant future capital structure implies WACC approach for valuation

Figure 24: Non-operating invested capital **pro-forma** account funds held available for M&A activity 2021E-2026F, in mn. USD



Note: Equity investments amounting to \$117m are also classified as non-operating assets but kept constant in forecast, as no valuation impact

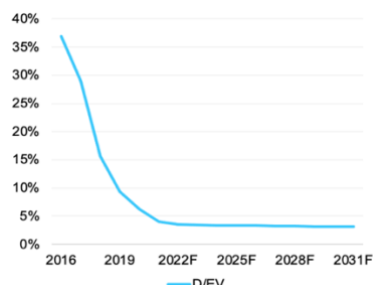
Source: Analysts estimates

Zebra's share repurchase program with an outstanding volume of \$728m is expected to be continued throughout the years. As a consequence, we model \$69m of buybacks every year from 2021E to 2031F. The management holds on to a zero dividend policy and does not intend to change this approach (Zebra Technologies 2020c). Therefore, we have modelled a pro-forma excess cash account *Accumulated funds held available for M&A activity*, which captures shareholder value in excess of cash outflows for share repurchases (see Figure 24). While we can not exactly predict M&A transactions, we expect Zebra to catch up with the high deal flow of the past two years. There are numerous investment opportunities potentially creating even more shareholder value than distributing these funds to investors now. Among others, potential M&A opportunities could lie within: 1) acquiring Datalogic's scanning business, 2) adding further capabilities in the recently entered MV market or, 3) consolidating the autonomous mobile robot market, once it matured (Santagate 2019).

DCF Valuation

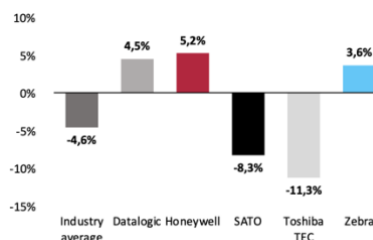
Methodology

Figure 25: Development of net debt to enterprise value 2016-2031F, in % of EV



Source: Analysts estimates

Figure 26: Net debt/enterprise value for Zebra and its competitors 3Q21



Source: Analysts estimates, Annual Reports

After the acquisition of Motorola's enterprise solutions, Zebra's capital structure was continuously subject to change due to the gradual downpayment of the debt proceeds used to finance the acquisition. The management does not target a strict capital structure, but follows a rather flexible capital structure band of 0-2.5x net debt to adjusted EBITDA (Zebra Technologies 2020b). During the 2Q21 and 3Q21 earnings webcasts, management indicates to remain comfortable with the current level of debt and does not plan major debt proceeds in the foreseeable future. As a result of constant debt but steadily increasing lease liabilities, we expect market value based net debt to enterprise value to be nearly constant in the future (see Figure 25). Furthermore, given the resulting low interest expenses, tax shields amounting to \$4m seem insignificant in relation to the enterprise value. Therefore, we deploy the WACC approach to value Zebra's equity by discounting the unlevered operating free cash flows with the WACC. To arrive at the fair equity value, we add the value of net non-operating assets and deduct the value of net financial debt as well as the outstanding intrinsic value of equity settled compensation. Consequently, the projected equity value is divided by total non-dilutive outstanding shares to obtain the 31st of December 2022 target share price.

We forecasted financials for the 4Q21E, the detailed forecasting period (2022F to 2026F) as well as the transitionary period (2027F to 2031F) to derive Zebra's future free cash flows. For the terminal value of the business, we estimated a perpetuity growth rate (g) derived from long-term real GDP growth estimates, long-term inflation expectations, as well as a company specific coefficient reflecting Zebra's

Perpetuity growth estimated
at 2.26% // Risk-return
revision in beta through
pandemic yields uncertainty

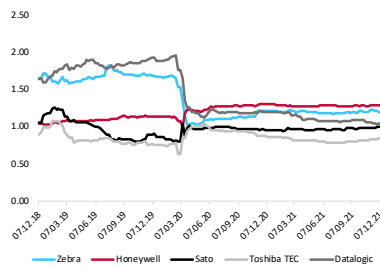
business in relation to the economy. For the global long-term real GDP growth we calculated an average of the estimates from IMF, OECD and Worldbank amounting to 3.05%. For the long-term U.S. inflation we considered the break-even between 10 year U.S. treasury bills and 10 year U.S. inflation protected treasury bills, as well as estimates from IMF, and the FED, averaging to 2.30%. For the company coefficient of 0.471, we estimated the proportion between the overall economy growth and Zebra business growth:

$$g = [(1 + \text{world real GDP}) * (1 + \text{U.S. inflation}) - 1] * \text{company coefficient}.$$

The resulting estimated perpetuity growth rate of 2.26% is slightly lower than long-term inflation expectations and well below long-term nominal GDP growth estimates.

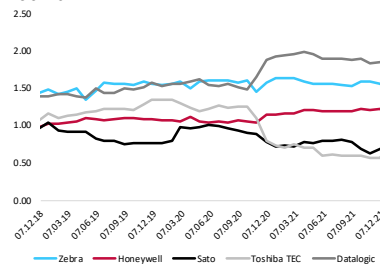
Discount rates

Figure 27: Rolling betas weekly 2018 - Dec 2021



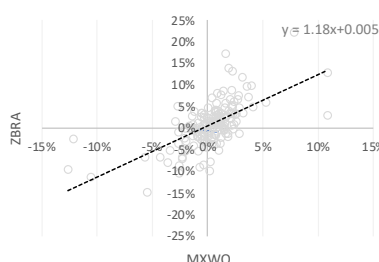
Source: Bloomberg

Figure 28: Rolling betas monthly 2018 - Dec 2021



Source: Bloomberg

Figure 29: Regression of Zebra's equity risk premium against MSCI World market risk premium Dec 2021



Source: Analyst estimates, Bloomberg

Cost of Equity (r_e) was estimated using the Capital Asset Pricing Model (CAPM) depicted in the following formula:

$$r_e = r_f + \beta_L * (r_m - r_f).$$

The proxy for the risk-free rate (r_f) was derived from the current yield-to-maturity (YTM) of 10 year U.S. government treasury bills, amounting to 1.44%. To obtain a fair estimate for Zebra's beta, we performed a regression of Zebra's equity risk premium against the MSCI World risk premium using both monthly and weekly data for the preceding 5 and 3 years, respectively. The weekly regression resulted in a levered beta of 1.18 with a standard error (SE) of 0.12 yielding a considerably tighter interval [0.95, 1.41] at the 95% confidence level than the monthly data (levered beta: 1.54, SE: 0.25, confidence interval [1.03, 2.5]). The weekly rolling beta analysis illustrated in Figure 27 reveals a sharp decrease at the start of the pandemic in March 2020 whereas this trend is smoothened in the monthly rolling beta analysis (see Figure 28). As shown in Figure 27, this pandemic induced beta adjustment seems not specifically bound to Zebra but rather affects the whole industry. We even recognize an industry beta convergence. Horstmeyer and Chaitanaya (2020) proved that the corona crisis reversed the risk-return profile of stocks from high volatility sectors (Technology, "Working from Home" (WFH)). This conclusion is supported by the fact that Zebra in specific profited from the increased digitization efforts induced by the Covid-19 pandemic as shown in the *Industry Trends by Vertical* section. We assume the weekly regression analysis and the lower levered beta of 1.18 as an accurate proxy for the future due to the following three reasons: 1) Zebra's accelerating shift from a sole hardware supplier towards a more software driven company and resulting lower operating leverage (see *Business Model* section) make us assume a lower forward-looking beta.

Lower 1.18 weekly beta as proxy for future due to: software transformation, increasing customer dependence, and pandemic induced digitization boost // WACC of 7.17%

Table 3: Unlevered beta comparison between Zebra, AIDC hardware and software industry 2021, on a weekly basis

Entity	Unlevered beta
Zebra Technologies	1.15
AIDC Hardware Industry	1.06
AIDC Software Industry	1.01

Source: Bloomberg

2) By increasingly becoming a full-service solution provider, Zebra turns into a strategic partner on whom customers will depend even in times of crisis. 3) We expect the pandemic induced digitization boost to continue in the foreseeable future. The new corona mutation Omikron further affects supply chains, of which AIDC provider will profit. Concludingly, we triangulated Zebra's unlevered beta estimates with the unlevered beta of comparable companies in the AIDC hardware and AIDC software industry. Zebra's unlevered beta of 1.15 seems to be moving in the right direction towards the hardware and software industry average of 1.06 and 1.01, respectively.

For the expected market risk premium, we relied on academic research: McKinsey investigated market risk premia dating back to 1962 and expect a risk premium between 4.5% and 5.5% for global investors (Koller et al. 2020). As we assume our marginal investor to be globally diversified, we use the average of McKinsey's suggested range, amounting to 5.0%. As a result, our estimates for Zebra's cost of equity results in 7.31%.

Cost of debt (r_D) was calculated using 1) the 10-year YTM from Bloomberg's U.S. Technology BB+ fair yield curve amounting to 3.81%, 2) the annualized weighted default probability for the underlying rating of 0.83% and 3) the respective loss given default for loans of 31.0% (Moody's 2017). We deployed this approach as all major rating agencies rate Zebra with BB+/Ba1. Additionally, the company does not have bonds outstanding but instead only term loans maturing in approximately 3 years. The following formula results in a cost of debt estimate for Zebra of 3.55%:

$$r_D = YTM - \text{default probability} * \text{loss given default}.$$

WACC amounts to 7.17% and is obtained by combining cost of equity and pre-tax cost of debt through the following formula:

$$WACC = \frac{E}{EV} * r_e + \frac{D}{EV} * r_D * (1 - t).$$

As shown above, our forecasts imply a constant D/EV of 2.98% and a E/EV of 97.02% accordingly.

Scenario Analysis

The scenario analysis highlights four potential scenarios that are reflected in our target share price. These scenarios include the 1) Base Case scenario, 2) Revenue Breakthrough scenario, 3) Supply Chain and Freight Costs Disaster scenario and 4) Closely Followed Competition scenario. Each scenario results in its own target price, and the final share price as of 31st of December 2022 represents a weighted average of these four scenario prices.

Sc.2: Revenue breakthrough
 due to superior market
 presence & more successful
 software market penetration //

Sc.3: Increased competition
 diminishes ZBRA's market
 shares

Base Case

Share Price: \$638

In the base case scenario, Zebra will continue to lead the AIDC hardware market due to 1) the favorable development of vertical and product revenue drivers and 2) the competition remaining at the current level. Furthermore, with the acquired industry-leading software capabilities, Zebra will successfully expand its presence in the AIDC software market. Margins are expected to improve gradually as a result of 1) Zebra's steady expansion towards a 75%/25% tangible/intangible split and 2) gradual improvement of freight costs. We weigh this scenario with 60%.

Revenue Breakthrough

Share price: \$697

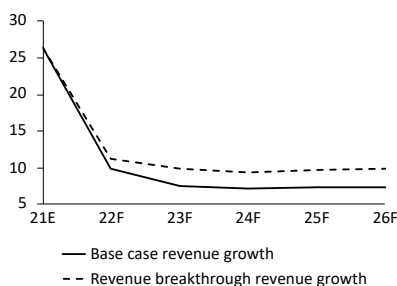
In the Revenue Breakthrough scenario, we expect Zebra to achieve higher revenue growth in the short to mid-term, driven by a superior vertical presence and a successful penetration in the software market. The new Omikron variant will continue to accelerate the digital transformation across all industries, making Zebra an even more important industry agnostic companion for its customers to optimize their workflows. Higher software growth might be driven by two factors: 1) Zebra further expands its cloud platform Zebra Savanna with MV capabilities and thus captures a higher software market share than assumed in the base case scenario. Likewise, recently acquired software portfolios such as Reflexis are gaining broader market acceptance than expected. 2) The already fast-growing software market is experiencing even greater growth due to increased demand for data analytics and MV solutions. We weight this scenario with 10%.

Closely Followed Competition

Share Price: \$626

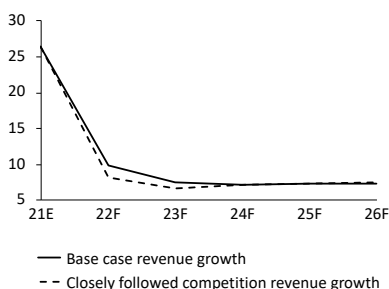
In the Closely Followed Competition scenario we assume Zebra to forfeit market shares due to a strenthened competitive landscape. In our opinion, competition may arise from three different directions: 1) Zebra's closest competitor Honeywell expands its geographical presence, closes the gap to Zebra in terms of patents and partner network size and leverages internal Group resources and know-how. 2) Datalogic successfully turnarounds its 2019 and 2020 revenue declines, manages to achieve the market leadership in the SIS and FRS segment and hence captures additional market share. 3) Toshiba TEC and Sato, as market leaders in the Japanese AIDC market, can increasingly apply their deep expertise gained in the retail and printing markets to the international and specifically Zebra's domestic U.S. market, thereby gaining more international customers and market shares. We weight this scenario with 20%.

Figure 30: Revenue growth Base Case scenario vs. Revenue Breakthrough scenario 2021E - 2026F, in %



Source: Analyst estimates

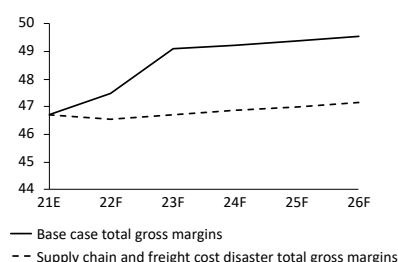
Figure 31: Revenue growth Base Case scenario vs. Closely Followed Competition scenario 2021E - 2026F, in %



Source: Analyst estimates

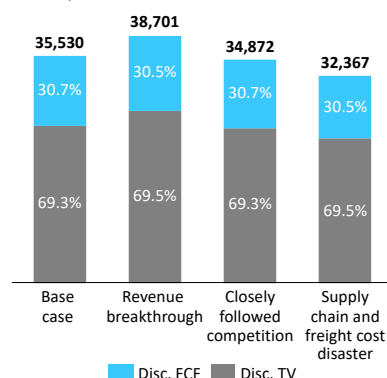
Sc.4: Ongoing supply chain issues & freight costs sustainably curb gross margin expansion // Scenario weighted share price target yields **HOLD** recommendation

Figure 32: Total gross margin Base Case scenario vs. Supply Chain and Freight Cost Disaster scenario 2021E - 2026F, in %



Source: Analyst estimates

Figure 33: Comparisson of enterprise values among all four scenarios Dec 2022F, in mn. USD



Source: Analyst estimates

Figure 34: Sensitivity analysis of Zebra's target share price Dec 2022F

		WACC				
		0.95	1.06	1.17	1.29	1.41
Growth Rate	-20%	6.08%	6.63%	7.17%	7.75%	8.33%
	-10%	767.4	672.7	597.5	533.6	481.1
	0%	801.0	697.9	616.9	548.7	493.1
	+10%	838.7	725.8	638.1	565.1	506.0
	+20%	881.1	756.6	661.4	582.8	519.9
		929.2	791.0	687.0	602.2	534.9

Source: Analyst estimates

Supply Chain and Freight Costs Disaster

Share Price: \$579

In the Supply Chain and Freight Costs Disaster scenario, we predict supply chain issues and freight costs to worsen in the future. As a result, Zebra's future gross margins will remain at the lower bound level of 2021E due to the following two reasons: 1) Unlike in 2019 and 2020, when Zebra was able to pass on commodity price increases from its suppliers to its customers, a third price increase would be considered unenforceable. 2) The imbalance between supply and demand continues to impact supply chains, leading to persistently high freight costs in the future. Because hardware revenue accounts for 84% of total revenue in 2021E, supply chain concerns are expected to have a major impact on overall gross margin, resulting in decreased future free cash flows. We weight this scenario with 10%.

Considering the weighted free cash flows of the four scenarios and discounting them at Zebra's WACC of 7.17%, yields a weighted Enterprise Value of \$35,400m. After deducting \$1,190m net financial debt, and equity-settled compensation of \$369m, and adding net non-operating assets of \$117m, we reach a fair Equity Value of \$33,958m. Finally, dividing equity value by 53.42m total outstanding shares results in a 31st of December 2022 price target of \$635.70 per share, a total return of 8.97%. Anticipated share repurchases of \$113m by Dec 2022 account for 0.36% of total return. Consequently, we recommend investors to **HOLD** the stock of Zebra Technologies.

Sensitivity Analysis

We conducted a sensitivity analysis to examine the impact of changing assumptions on our price target and thus on our investment recommendation. Since the terminal value accounts on average for 69.5% of the EV across all four scenarios, the sensitivity analysis considers these factors that contribute to its determination. Hence, we decided to test our investment recommendation on variations in 1) the equity beta, affecting WACC, as well as 2) the long-term growth rate. Especially in the beta, we see uncertainties, wherefore we vary the beta between the lower bound level of the 95% confidence interval, corresponding to the increasing convergence towards the software beta, and the upper bound level, corresponding to the re-convergence towards the pre-pandemic beta level. The long-term growth rate is adjusted by 10% and 20% in both, upside and downside direction. As shown in Figure 34, our valuation is more sensitive to the beta, whereas it appears to be more robust to our long-term growth assumptions. Nevertheless, our **HOLD** recommendation seems to find the middle ground between an overly optimistic or overly pessimistic investment recommendation.

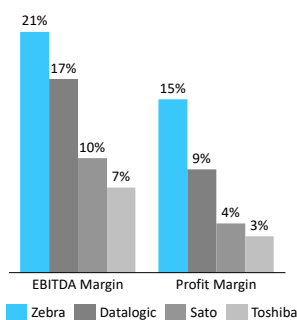
Multiple valuation deviates from DCF valuation, as market seems to value in ZBRA's market leading position

Table 4: Normalized P/E and EV/EBITDA multiples of Zebra and its competitors T12M

	P/E	EV/EBITDA
Zebra	40.3x	30.3x
Sato	15.0x	5.9x
Toshiba	18.0x	6.9x
Datalogic	17.1x	9.6x
Harmonic Mean	19.5x	8.9x

Source: Analyst estimates, Annual reports

Figure 35: Normalized EBITDA and profit margins of Zebra and its competitors T12M in %



Source: Analyst estimates, Annual reports

Multiples

To triangulate the results of the DCF analysis, we additionally determined Zebra's fair value using relative valuation. After assessing for geographical, operational (product mix, size) and financial similarity, we decided to further analyze Datalogic, Sato and Toshiba TEC. Honeywell as Zebra's main competitor does not report its financial results for its comparable Productivity Solutions segment on such granularity, wherefore it is neglected in the multiple analysis. To account for the fact, that P/E ratios are oftentimes affected by capital structure, we considered additionally the EV/EBITDA multiple. The competitor's one-off normalized T12M EV/EBITDA multiples vary from 5.9x to 9.6x, whereas the normalized T12M P/E ratios vary between 15.0x and 18.0x. Nevertheless, Zebra's EV/EBITDA and P/E ratio is estimated at 30.3x and 40.3x respectively, which is significantly higher than the weighted average of 8.9x and 19.5x. These multiples would imply a share price of \$152 for the EV/EBITDA and \$282 for the P/E multiple. The following reasons might explain the deviation of Zebra's current share price and the share price implied by our multiple valuation: 1) Although one might think that Zebra is potentially overvalued, we rather think the market prices in Zebra's market leading position (#1 in mobile computing/data capture/printing segments, highest EBITDA and profit margins (see Figure 35), largest partner network). 2) Also, one might reason that those selected competitors are not optimally comparable due to Zebra's broader market presence than Sato, Toshiba TEC and Datalogic (see *Geographical Presence* section). In conclusion, these factors may explain Zebra's notably higher EV/EBITDA and P/E ratios, resulting in valuation disparities.

Conclusion

As we have shown, Zebra is expected to be able to maintain its leadership position in the global AIDC market and managed to build excellent capabilities to successfully expand in adjacent markets such as MV, AIDC software, and mobile robots. Our scenario weighted target share price incorporates both, 1) the growth opportunities derived thereout, and 2) potential headwinds arising from intensified competition and a tense environment on global shipping and commodity markets. With our HOLD recommendation, based on a total return of 8.97% within the next 12 months, we confirm the market's pricing of the Zebra Technologies stock.

ZEBRA TECHNOLOGIES CORP.

TECHNOLOGY

MAXIMILIAN WEBER & LUKAS BAUERSCHMIDT

COMPANY REPORT

17TH DECEMBER 2021

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Is the Zebra sated or not yet?

Accelerated digitization along supply chains promises further green

- Based on the 22F target share price of \$635.70, resulting in a total return of 8.97%, we recommend to hold ZBRA. Share repurchases of \$113m will contribute 0.36% to total return.
- 21E yields exceptionally strong revenue growth of 26.5%, resulting from a pandemic-induced digitization boost across all of Zebra's verticals. With an expected EBIT margin of 17.7% in 21E, ZBRA continues to outperform even its fiercest competitor Honeywell by as much as 3.8pp in operating margin.
- Before leveling-off at 5.0%, YoY revenue growth rates are estimated to range between 7.4%-9.9% until 26F, both due to a deeper core market penetration and excellent capabilities in the adjacent fields of Machine Vision, Software solutions, and Robotics, built throughout the past 2 years.
- Turmoil on the logistics markets has a -3.0pp impact on hardware gross margin in 21E, but is expected to largely reverse by 23F. Together with an increasing intensity of high-margin software business, total gross margin is estimated to be pulled-up 4.0pp to a sustainable level of 50.8% in 31F.
- We see increasing competition for market shares and further escalating freight and commodity prices as key threats to Zebra's future performance and incorporated these in our valuation.

Company description

With its Data Capturing and Robotics solutions, Zebra Technologies connects front-line workers, assets, and data to optimize workflows and to create visibility throughout supply chains.

Recommendation: **HOLD**

Bloomberg - B/H/S 9/2/2

Price Target 31-Dec-22F: **\$635.70**

Upside 8.97%

Price as of Dec-21: **\$585.32**

Bloomberg: ZBRA; Reuters: ZBRA.O

52-week range (\$) 333.06 – 615.00

Market Cap (\$m) 31.266

Outstanding Shares (m) 53.42

Source: Bloomberg

Zebra Technologies vs. MSCI World



Source: Bloomberg

In mn. USD, except otherwise stated	2020	2021E	2022F
Sales	4,448	5,625	6,181
NOPLAT	582	837	1,015
Unl. FCF	376	516	807
EPS	\$9.36	\$15.24	\$18.61
Dividend payout ratio	-	-	-
Share repurchases	200	69	69
P/E	19.2x	37.7x	33.8x
ROIC	18.1%	24.4%	27.1%
WACC	7.2%	7.2%	7.2%
Interest cover	9x	52x	64x
Operating leverage	303%	264%	243%
Gross margin	45.0%	46.7%	47.5%
Operating margin	14.9%	17.7%	19.5%
Net profit margin	11.3%	14.5%	16.0%

Source: Analyst estimates

THIS REPORT WAS PREPARED EXCLUSIVELY FOR ACADEMIC PURPOSES BY M. WEBER & L. BAUERSCHMIDT MASTER IN MANAGEMENT STUDENTS OF THE NOVA SCHOOL OF BUSINESS AND ECONOMICS. THE REPORT WAS SUPERVISED BY A NOVA SBE FACULTY MEMBER, ACTING IN A MERE ACADEMIC CAPACITY, WHO REVIEWED THE VALUATION METHODOLOGY AND THE FINANCIAL MODEL. (PLEASE REFER TO THE DISCLOSURES AND DISCLAIMERS AT END OF THE DOCUMENT)

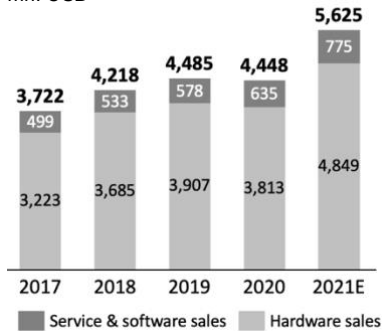
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Zebra at a Glance

Products and Segments

Figure 1: Zebra sales 2017-2021E, in mn. USD



Source: Annual reports and analyst estimates

Figure 2: Various stationary/ portable barcode and RFID tag printers



Source: Zebra Technologies Corp.

Figure 3: Zebra scanners for multiple applications



Source: Zebra Technologies Corp.

Figure 4: Zebra ruggedized mobile computers



Source: Zebra Technologies Corp.

Figure 5: Zebra fixed RFID reader



Source: Zebra Technologies Corp.

Zebra Technologies Corporation (Zebra), founded in 1969 and publicly traded on NASDAQ since 1991, is a global leader in the Automatic Identification and Data Capture (AIDC) market, generating \$4.4bn in Sales from 180 countries with 8.800 employees in 2020. Figure 1 illustrates Zebra's sales development throughout the preceeding five years. The AIDC market is primarily composed of barcode and card printers, and devices for mobile computing, data capture and radio frequency identification (RFID), scanning, as well as solutions aiming to optimize workflows, asset utilization and regulatory compliance by connecting the physical and digital world (Krebs 2020; Zebra Technologies 2020c). Zebra organizes its business in two segments, *Asset Intelligence & Tracking (AIT)* and *Enterprise Visibility & Mobility (EVM)*.

In AIT, which is the traditional core business of the company, Zebra sells barcode and card printers which issue e.g., receipts, labels, tickets, tags, wristbands and plastic cards. Supplemental to its printers, the company sells respective printing supplies such as barcode label raw materials, printer ribbons and engines, thermal-labels and RFID tags. Furthermore, AIT comprises the offering of real-time location solutions, which include tags, receivers, sensors as well as software. This enables customers to locate, track, and optimize asset and workforce. Zebra additionally provides retail solutions, supporting customers with their inventory management including cycle counts and analytics. In 2020, the AIT segment accounts for 32% of total revenues, equaling \$1.4bn.

EVM, formerly Motorola's mobile solutions business, was acquired in 2014 for a cash consideration of \$3.5bn and consists of multifunctional mobile computing devices that are e.g., ruggedized or vehicle-mount. Furthermore, the segment entails fixed, handheld, and embedded barcode scanners, image capturing devices and RFID readers for applications such as point-of-sale scanning, warehouse picking and packing, line side replenishment or material flow visibility. Additionally, the EVM segment has workflow optimization solutions comprised of a growing portfolio of software solutions for workforce and task management. This allows for real-time data access and prescriptive analytics to connect front-line workers and enhance collaboration and communication. EVM accounts for 68% of total revenues, equaling \$3.0bn in 2020.

Solutions, such as the *Savanna* cloud data platform are combining hard- and software products to data ecosystems. The Savanna platform aggregates and

Figure 6: Zebra Autonomous Mobile Robots



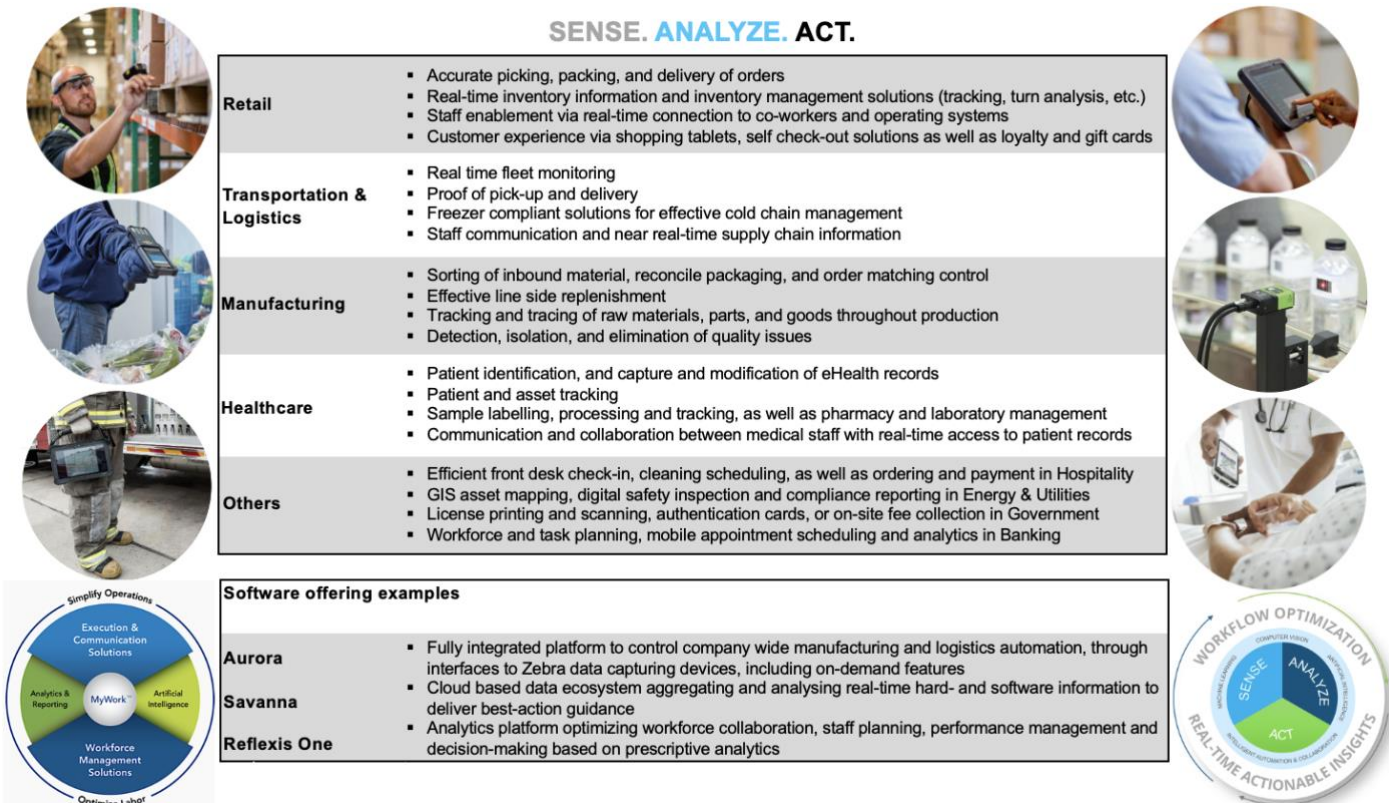
Source: Zebra Technologies Corp.

analyzes real-time data from all hardware devices and systems and provides action guidance to front-line workers in real time. Zebra's exclusive focus on the AIDC market and its offering of end-to-end workflow optimization solutions makes the company a strategic partner to its customers rather than a sole hardware supplier, like many other players in the market (Baird & Co. 2020). Finally, the company provides a variety of services including technical support and consulting, systems design, maintenance and repair of products and infrastructure.

The majority of Zebra's end-users operate in the following industries: Retail, Manufacturing, Transportation and Logistics (T&L), and Healthcare. Our analysis showed that these industries account for approximately 85% of total sales. The remaining 15% of sales result from business in other verticals, particularly Government, Hospitality and Financial Services. Figure 7 comprises a selection of product applications and exemplary software offerings, which aim to convey an impression of the wide range of use-cases for Zebra products.

Figure 7: Use cases for Zebra products in different industries and exemplary software offerings

SENSE. ANALYZE. ACT.



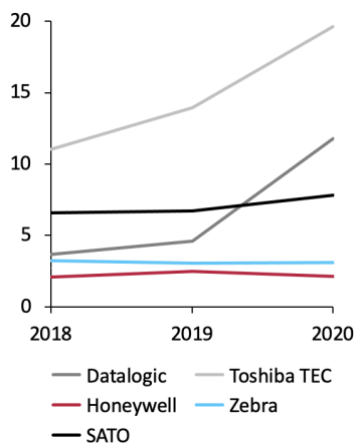
Source: Zebra Technologies Corp. (pictures)

Business Model

Sourcing and manufacturing: As presented in Figure 9, production and assembly is predominantly outsourced to Electronics Manufacturing Service Companies (EMSs) and Joint Design Manufacturers (JDMs), which produce hardware according to Zebra's specifications. Based on our supply chain analysis, we estimate that 85%-90% of hardware production is outsourced to EMSs and

Extensive outsourcing led to low operating leverage but created dependency on production partners // R&D spending considerably higher than competition

Figure 8: Degree of operating leverage of Zebra and comparables 2018-2020



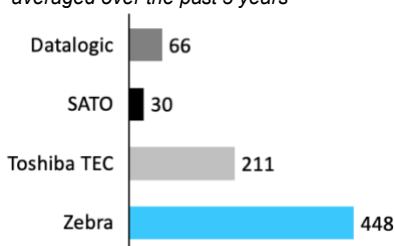
Note: Operating leverage calculated as gross profit divided by operating profit.

Source: Annual reports

Note:

As Honeywell reports segment gross margin and operating income, we were able to include the Co. in the operating leverage comparison. For the majority of our analyses, however, we could not include Honeywell as data is not reported on segment level, i.e. R&D expenses or balance sheet accounts.

Figure 10: Zebra's and competitor's yearly R&D spending in mn. USD, averaged over the past 3 years



Source: Analyst calculations based on annual reports

JDMs (Rogers 2019). Zebra particularly outsources to U.S. headquartered Jabil Inc. and Taiwan-based Sinbon Electronics, resulting in a highly flexible cost structure and a low degree of operating leverage. As shown in Figure 8, Zebra has a superior operating leverage than its competitors, whose operating leverage even increased during the pandemic. Our analysis also exposed that Zebra sources a significant portion of inputs, such as touch panels and mixed-signal integrated circuits (semiconductors), from FocalTech, ON Semiconductor, and Microchip Technologies (Bloomberg 2021). Especially, Zebra's dependency on Jabil and these suppliers, as well as limited control over raw material price negotiations and production quality inherent in the operating model, might pose the following risks: 1) Higher sourcing costs and 2) time-consuming rework, which would result in delivery delays.

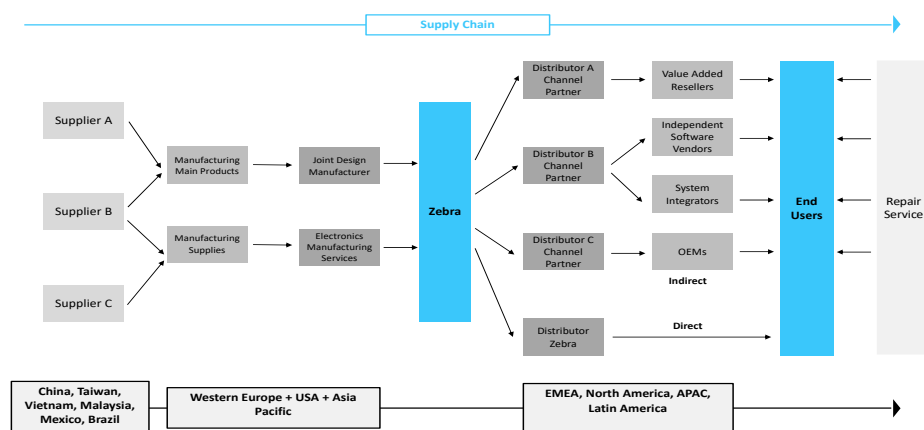


Figure 9: Zebra's operating model

Source: Annual report

Distribution and sales: After sourcing and manufacturing, Zebra ships its products to distribution centers, where some products undergo final assembly or receive customization, e.g., packaging or firmware downloads for final shipment (Zebra Technologies 2020c). Zebra's sales activity comprises both an indirect two-tier distribution to large resellers, such as Arrow Electronics or ScanSource, as well as Zebra's direct sales activity to key accounts. As a result, Zebra can rely on a network of more than 10,000 reselling partners that participate in Zebra's Partner Program (Zebra Technologies 2021g). However during the the previous three years, the top three distributors accounted for 49%-51% of Sales. As valuable as these channel partner relationships are, we see such dependencies as a risk for the sales flow in case of frictions between Zebra and the respective distributor, at least in the short-term.

Research & development: Given the importance of innovation in the industry, Zebra invests heavily in Research & development (R&D) by employing roughly 2,400 engineers and spending constantly more than 10% of revenues for R&D.

Large sales partner program and M&A activity as major pillars of growth strategy

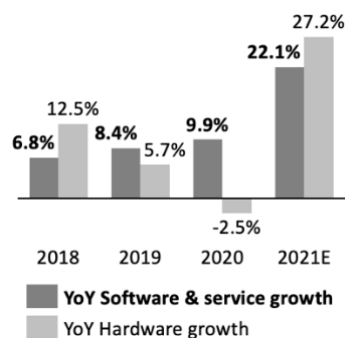
Table 1: Zebra past 3 years acquisitions offering, estimated sales, and cumulative abnormal announcement returns for different windows

Target	Hard-ware	Soft-ware	Est. Sales	AAR	
				[-3; +3]	[-3; +20]
antuitai		✓	0-10m	+	-
Fetch	✓	✓	10-15m	+	+
Adaptive V.		✓	0m	+	-
Reflexis		✓	60-70m	-	+
Cortexica		✓	0m	+	+
Proftect		✓	10-15m	-	+
Temptime	✓		15-25m	-	-

Note: Abnormal announcement returns calculated by subtracting the CAPM expected return from the actual return -3/+3 days and -3/+20 days around the respective acquisition announcement date. Market return calculated on the basis of MSCI World. Positive AAR (+), negative AAR (-). For the description of each target's offering and the benefits for Zebra, please refer to our model, tab "Zebra M&A".

Sources: Annual reports, Bloomberg, Analyst calculations

Figure 12: Zebra's revenue growth split by Hardware and Software & service, in % of total sales



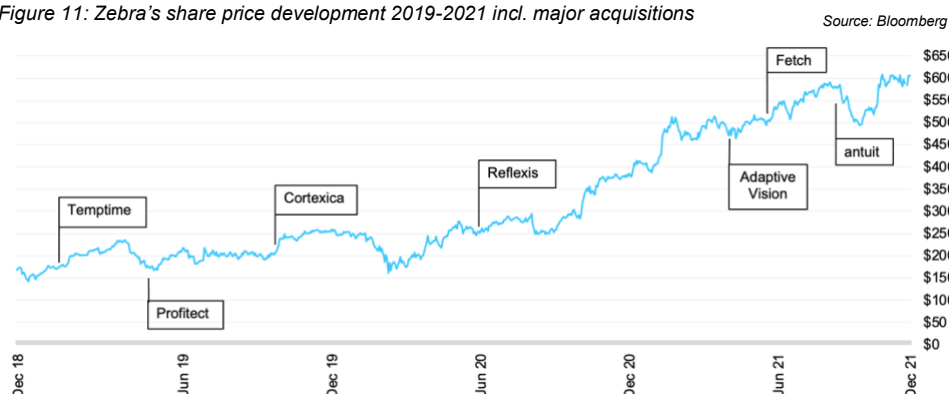
Source: Annual reports and analyst estimates

As Figure 10 demonstrates, Zebra invests considerably more funds in R&D than its competitors. Those investments are primarily aimed to strengthen and broaden the product and solutions portfolio (Zebra Technologies 2020c). Furthermore, a considerable amount of acquisition purchase prices could be considered as additional R&D spending. Our analysis of the purchase price allocations of the transactions from 2019 to 2021E revealed that on average one-third of consideration paid was classified as "Technology & patents"-intangible assets. Given an aggregated purchase price of \$1,277m and Technology & patents of \$429m from 2019 to 2021E, this would yield on average \$143m additional R&D expenses per year. For further R&D analyses, including patents, please refer to the *Industry Overview* section.

Strategy

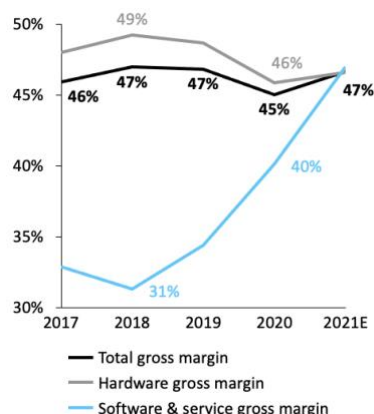
Zebra's strategy relies on two pillars. First, organic growth through its go-to-market strategy, which involves partnering up with Value Added Resellers (VARs) and Independent Software Vendors (ISVs) that are bound within Zebra's Partner Program. Second, inorganic growth through Mergers & Acquisitions (M&A). Especially the \$3.5bn acquisition of Motorola's enterprise business in 2014 supplemented Zebra's traditional business (Hampton 2021). In the past three years, Zebra conducted seven transactions, aiming at enhancing and broadening its product portfolio to maintain the leadership position in the AIDC market. The acquisition of Temptime for instance, a company providing temperature monitoring solutions for cold-chain logistics and vaccine distribution, broadened Zebra's portfolio and obviously paid-off during the pandemic. Especially in the last two years, we observe increased acquisition activity towards software and robotics companies. These acquisitions enhance Zebra's capabilities in areas like machine vision software (MV), prescriptive analytics solutions, and autonomous mobile robots, which led to above average growth of *Software & service* sales (see Table 1 and Figure 12). As Table 1 and Figure 11 indicate, Zebra is able to create value from the majority of the acquisitions.

Figure 11: Zebra's share price development 2019-2021 incl. major acquisitions



Growing software business stabilizes gross margin despite pressure on hardware COGS through supply chain frictions // Debt volatility declining

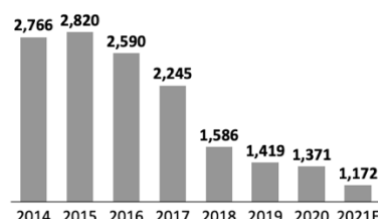
Figure 13: Zebra historical total gross margin and by tangibility 2017-2021E, in % of sales



Note: Total gross margin of core competitors (Datalogic, Honeywell, Sato and Tohsiba TEC) averaged 2018-2020: 45.3%.

Source: Annual reports and analyst estimates

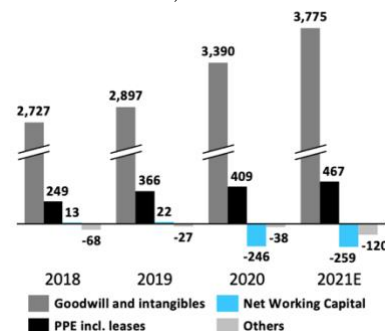
Figure 14: Zebra's net debt development from 2014 - 2021E, in mn. USD



Note: No debt before 2014, hence negative net debt.

Source: Annual reports and analyst estimates

Figure 15: Invested capital by components from 2018 - 2021E, in mn. USD



Source: Analyst calculations based on annual reports

Financial Analysis

Sales: As shown in Figure 12, the topline growth target of 4-5% given by the management has been outperformed during the last years (Baird & Co. 2020). Except for 2020, where sales remained flat due to the Covid-19 pandemic. While hardware sales eroded by 2.5% in 2020, software and service revenue growth further accelerated to an increase of 9.9%.

COGS: While Zebra's total gross margin remained at a rather stable level, between 46% and 47% until 2019, hardware COGS have been under pressure in the last two years, mainly due to two reasons: 1) Surging tariffs on goods shipped from China to the U.S., induced by political frictions between the two countries, and 2) skyrocketing sea and air freight rates since 2Q20, driven by supply shortages due to the Covid-19 pandemic. Zebra substantially diversified its outsourcing footprint from China to Taiwan and Malaysia and hence is able to avoid those extra tariff impacts since 2Q20 (Zebra Technologies 2020a). Additionally, the negative impacts on total gross margin have been partially offset by further complementing the product portfolio with less COGS intensive software offerings (see Figure 13, Figure 1). Especially due to Zebra's recent software acquisitions, these offsetting effects accelerated notably. Zebra's software gross margin is roughly 20% higher than in the traditional business and even 35% higher than in the service business. Hence, with the acquisitions of Cortextica and Reflexis in 2019 and 2020, the Software & service gross margin increased (Zebra Technologies 2021b). Before 2019, Zebra's Software & service business was comprised of low margin services and low value-added printing and scanning software, yielding a combined margin of 31% for Software & service sales.

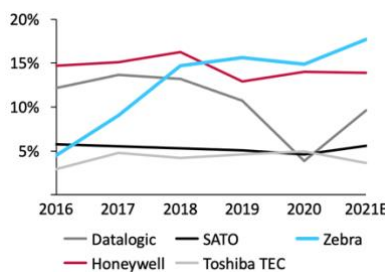
SG&A: Fixed-cost degression led to a continuous decrease over the course of the last years. Selling and Marketing expenses decreased from 12.4% of revenue in 2016 to 10.9% of revenue in 2020, while General and Administrative expenses declined 1.8pp from 8.6% to 6.8% of sales during this period.

Debt: The debt proceeds of \$3.2bn within the context of the Motorola acquisition have been continuously reduced throughout the years, leaving a debt portion of \$0.9bn at the end of 2021. Net debt developed accordingly from \$2.8bn in 2014 to \$1.2bn in 2021E (see Figure 14), whereas on-balance lease liabilities of \$129m, \$159m, and \$181m in 2019-2021E partially set-off the decreasing trend in debt. A year-over-year (YoY) decreasing interest burden follows the development of Zebra's indebtedness.

Invested capital and CapEx: As shown in Figure 15, the invested capital increased over the years and is characterized by a high intensity of Intangible

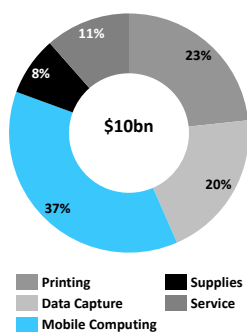
NWC recently extraordinarily low due to pandemic // Superior profitability than competition // Hardware market size estimated at \$15bn

Figure 16: Operating margin of Zebra and its core competitors 2016-2021E, in % of sales



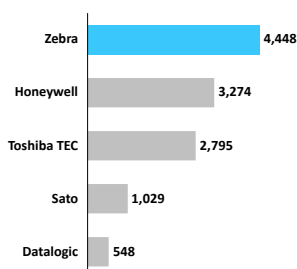
Source: Annual reports, Bloomberg, Analyst estimates

Figure 17: AIDC hardware market size, 2020, in bn. USD



Source: Analyst Estimates, Baird & Co. (2020)

Figure 18: Zebra's revenue against its AIDC comparables 2020, in mn. USD



Source: Annual reports

assets and a low contribution of Net Working Capital (NWC) and PPE. This reflects both Zebra's M&A and manufacturing outsourcing activity. The increase in PPE mainly relates to on-balance sheet operating leases as of 2019, accounting for \$107m, \$135m, and \$168m in 2019 and thereafter. The extraordinarily low NWC in 2020 and 2021E is caused by considerably higher revenue deferrals as a result of intensified business with large accounts and increased accrued liabilities, both induced by the Covid-19 pandemic. Furthermore, supply chain disruptions prevent the company from the usual year-end inventory restocking in 2021E, which has an YoY impact of \$-115m on inventory. Therefore, we do not expect NWC to be negative in the future but rather catch up with pre-pandemic levels.

Essentially, we see that the business does not require large investments in PPE to grow, which turns out favorable in terms of Net income to Free cash flow conversion. In summary, richer operating margins were achieved mainly through top-line growth, an increasing software business, and fixed-cost degression, especially at the SG&A level. As a result, Zebra outperforms its core competitors in terms of operating margin since 2018 (see Figure 16). Furthermore, strict working capital management, including the mentioned one-off effects in 2020 and 2021E, contributed to growing Free cash flows as well. Additionally, shareholders are remunerated by Zebra's share repurchase program, which was authorized by the Board in mid-2019 and has an aggregated volume of up to \$1,000 million without definitive duration. As of 3Q21, the remaining volume of the program amounts to \$728m.

Industry Overview

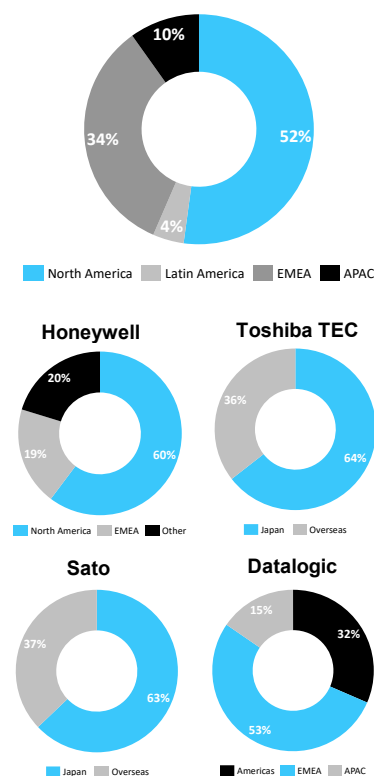
Zebra is competing in the AIDC hardware market and is increasingly penetrating the adjacent AIDC software and MV markets. Both markets are further analyzed in detail below.

Competitive Landscape AIDC Hardware Market

As illustrated in Figure 17, the \$10bn heavy AIDC hardware market includes mobile computers, data capturing devices, barcode printing products, as well as supplies, and represents Zebra's core market (Baird & Co. 2020). The main vision is to connect the physical to the digital world and thus to record and digitize every product in the supply chain, mainly in the following industries: Retail, Transportation & Logistics, Manufacturing and Healthcare. Main competitors include Honeywell, Datalogic, Toshiba TEC, Sato, Newland and Brady Corp. However, Newland and Brady will not be analyzed further, as Newland primarily focuses on China and Brady focuses almost entirely on the barcode printing

Strong geographical overlap with HON, rather low with rest of competition // Strong product overlap with DAL & HON

Figure 19: Zebra's and competitors geographical revenue split 2020, in %



Source: Annual reports

Table 2: Zebra's and competitor's product offerings 2021

	Barcode & card printers	Handheld scanners	Stationary scanners
Zebra	✓	✓	✓
Datalogic		✓	✓
Honeywell	✓	✓	✓
Sato	✓		
Toshiba TEC	✓		✓

	RFID solutions	Mobile computer	Software solutions
Zebra	✓	✓	✓
Datalogic	✓	✓	
Honeywell	✓	✓	✓
Sato	✓		✓
Toshiba TEC			✓

Source: Company websites, Annual reports

subsegment (see Figure 18). The following section analyzes Zebra's competitiveness based on the following five industry relevant factors: 1) Geographical Presence, 2) Products and Pricing, 3) Branding and R&D, 4) Business Strategy, and 5) Software Mergers & Acquisitions.

Geographical Presence

Honeywell, with its Safety and Productivity Solutions segment, is Zebra's closest competitor measured in revenue and geographical presence. Adjusting the segment's revenue by the non-overlapping safety products' revenue, we estimate the normalized segment's AIDC revenue at \$3,274m. Honeywell is headquarter in the United States and operates in the same geographies as Zebra, namely North America, EMEA, Asia Pacific and Latin America. 60% of Honeywell's 2020 group revenue stem from North America, making it their main market and hereby competing closely with Zebra. Toshiba TEC and Sato represent the third and fourth largest competitor measured in revenue, respectively. Both companies focus on Japan as their domestic markets, accounting for 64% and 63% of their total 2020 revenue. Datalogic, an Italian AIDC provider, is the smallest competitor but offers the best overlap in terms of products and generates 53% of its 2020 revenue in EMEA. In Zebra's U.S. domestic market, we expect only Honeywell to compete substantially, due to the other competitors' EMEA and APAC focus.

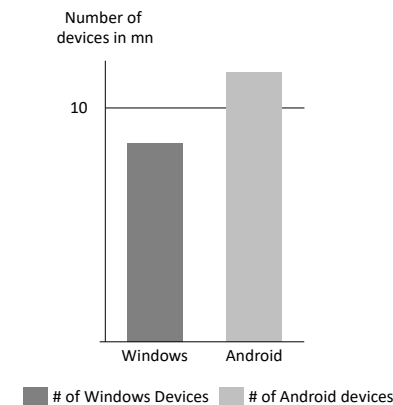
Products and Pricing

As illustrated in Table 2, Zebra offers the broadest AIDC product portfolio in comparison to its main competitors. Both, Honeywell and Datalogic show a great product overlap whereas Sato and Toshiba TEC strongly focus on printing, (RFID) labeling and software solutions. The following section describes a detailed analysis of the three revenue heaviest product segments in the AIDC market (mobile computing, data capture, printing), accounting for roughly \$8bn of the total \$10bn AIDC hardware market (see Figure 17).

Mobile computing: With the Motorola acquisition, Zebra extended its product portfolio with the #1 mobile computing segment in the AIDC market and thus gained a clear competitive advantage over its closest competitor Honeywell (Motorola Solutions 2014). Additionally, Microsoft announced that it will end its support and updating service of its legacy mobile operating systems in the beginning of 2020. Zebra anticipated this trend earlier than its competitors and migrated almost entirely from Microsoft device systems to the now industry dominant Android based systems (Bassett 2020). Through Zebra's rapid migration to Android systems, management announced that it captured a competitive edge: Zebra "sell[s] over five times more Android-powered enterprise devices each year

Computing: ZBRA as clear market leader // Data capture: ZBRA as leader but moderate headwind from DAL // Printing: ZBRA as leader but slight headwind from Asian competition

Figure 20: Number of Windows and Android based mobile computers in the market 2021, in mn. devices



Source: Earnings call 4Q20

than [its] nearest direct competitor" (Zebra Technologies 2021f) and hence gained a market share of 50% in the overall mobile computing segment in 2020. We support Zebra's future growth view due to the strong market positioning, industry superior relations and partnerships with Android, and resulting recurring customer bases (Zebra Technologies 2021f). **Data capture:** The scanning product portfolio of Zebra, Honeywell and Datalogic entails each a broad selection of 1D and 2D general-purpose scanners, rugged handheld scanners, healthcare scanners, stationary industrial scanners (SIS), and fixed retail scanners (FRS). Comparing the product range of all vendors, Datalogic offers the most extensive scanner portfolio, Honeywell the second extensive, and Zebra the least extensive (BVL-Technologieradar 2020). In 2020 and 2021E for instance, Datalogic launched nine new scanning products (Datalogic 2021b), whereas Zebra launched only two. With ten different scanning categories, Datalogic is specifically addressing the needs of different focus groups, and thus creating a competitive advantage. Especially Datalogic's product breadth in the SIS and FRS segment stands out and is aligned with Datalogic's mission to intensely concentrate on the scanning segment and to gain the market leadership (Datalogic 2020; 2021c). Zebra is currently holding a market share of roughly 30% in the data capture segment. Nevertheless, due to Datalogic's rising focus on its scanning business, we believe that Zebra's future market shares in the scanning segment could be challenged. We consider the scenario of highly competitive market shares in the *Scenario Analysis* section.

Printing: The barcode and card printing segment is mainly dominated by Zebra, Sato and Toshiba TEC. Sato and Toshiba TEC are clear market leaders in the Asian printing market, while Zebra captures most of the North American barcode and card printing market. Sato's competitive differentiator lies in the offering of direct on-site customer solutions instead of relying on indirect distribution channels. Sato's Japanese market share in the printing segment is estimated at 40%, followed closely by competitor Toshiba TEC (Shared Research 2021). In contrast, Zebra dominates the oversea barcode and card printing market through its extensive partner and distributor network and thus captures a global market share of approx. 40%. Although Sato and Toshiba TEC maintain strong expertise in the Asian market, we do not expect Zebra to face strong competition from Asian competitors due to their low-scalable direct sales strategy. Additionally, customers that already rely on Zebra products are expected to rather purchase add-on solutions compatible with the Zebra ecosystem, instead of switching to new systems. Hence, switching costs are estimated to be high. As a result, Sato remains a strong competitor in the APAC region, but a comparatively weak competitor in EMEA and North America (Shared Research 2021; Sato Holdings Corp. 2020). **Products:** The price analysis illustrated in Table 3 compares

Table 3: Price analysis of Zebra's and competitors' products 2021, in USD

in \$	Barcode & card printers		Handheld scanners	
	Model	Price	Model	Price
Zebra	ZT610	2251	DS8108	206
Datalogic	-	-	Gryphon	330
Honeywell	PX4i (4")	2656	Xenon	449
Sato	CL4NX Plus	1099	-	-
Toshiba TEC	TEC B-EX4T	1637	-	-

in \$	RFID Solutions		Mobile Computers	
	Model	Price	Model	Price
Zebra	Zebra AN51	134	TC26	572
Datalogic	DLR-DK001	344	Memor K	467
Honeywell	500410096	168	ScanPal	705
Sato	-	-	-	-
Toshiba TEC	-	-	-	-

Source: Company websites, BVL-Technologieradar (2020)

*ZBRA superior in terms of:
product warranty, brand
awareness, R&D incl.
patents, partner network*

Table 4: Warranty analysis of Zebra and competitor's products 2021, in years

	Mobile Computer	Printers	Scanners	RFID
Zebra	3 years	2 years	3-5 years	1 year
Datalogic		Individualized		
Honeywell	1 year	1 year	3-5 years	1 year
Sato	-	1 year	-	1 year
Toshiba TEC	-	1-2 years	-	-

Source: Company websites

Figure 21: Google Trends results when searching for "Zebra Techn." and "Competitors" 2021, in interest over time (standardized)

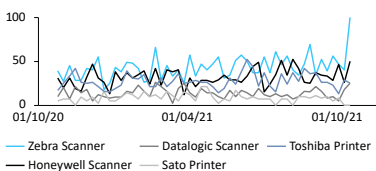
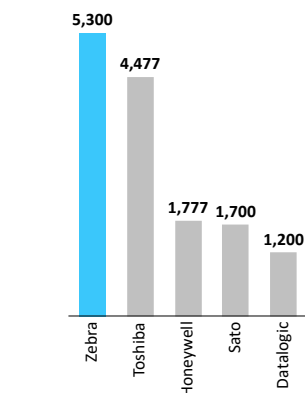
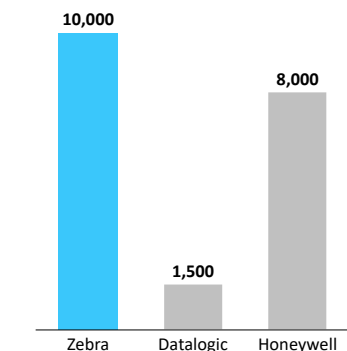


Figure 22: Innovation power of Zebra and competitors 2021, in nr. of outstanding patents



Source: Company websites, DEPATISnet

Figure 23: Partner network size of Zebra and competitors 2021, in nr. of partners



Source: Annual reports, Company websites

products with similar technical features from all five competitors. Our analysis yields that Honeywell tends to dominate the upper price segment, Datalogic and Zebra the middle price segment, and Sato and Toshiba TEC the lower price segment. **Warranty:** In terms of warranty (see Table 4), Zebra offers in each of its product segments at least as good conditions as its closest competitor Honeywell. Especially in the mobile computer and printing segment, Zebra offers superior warranty conditions than Honeywell.

Brand Recognition and R&D

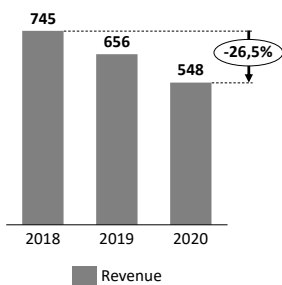
We use Google Trends as proxy for analyzing the brand awareness of each competitor (see Figure 21). Zebra seems to achieve the highest interest over time with a recent significant increase in brand awareness, followed by Honeywell, Toshiba TEC, Datalogic and Sato. Next to the R&D analysis provided in the *Financial Analysis*, we further analyzed Zebra's and competitors' innovation power expressed in number of outstanding patents as shown in Figure 22. Zebra clearly stands out with roughly 800 more outstanding patents than Toshiba TEC and 3x more outstanding patents than Honeywell's Safety and Productivity Solutions segment.

Business Strategy

All five competitors distribute and sell their product offerings both directly and through their partner channel network. As illustrated in Figure 23, Zebra cooperates with more than 10,000 partners, and hence relies on 2,000 and even 8,500 more distribution partners than Honeywell and Datalogic, respectively. This gives Zebra a broader reach and a clear competitive advantage. The following describes each competitors targeted business strategy. **Honeywell:** Honeywell's mission is to grow in three specific ways: 1) To grow its global core hardware business and specifically focus on selling scanning and printing products. 2) To expand its device-related and cloud-based application offering and to further penetrate the additional \$15bn software total adressable market (TAM). 3) To capture market share in high growth countries like China and India. We expect that Honeywell's group structure allows them to rely on existing innovations, especially in the software area (e.g. Honeywell Forge). As a result, Honeywell might be able to innovate faster than Zebra and avoid ill-advised software launching difficulties (Honeywell 2018; 2019). **Datalogic:** In contrast, Datalogic strives to remain a product company and to expand its market share especially in the manufacturing industry. According to its management, this should be achieved by inorganic growth through acquisitions in the stationary industrial scanning (SIS) submarket. Datalogic concentrates on North America and APAC (esp. China) as their second

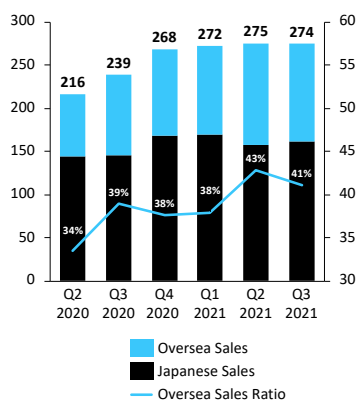
DAL sales slump diminishes its competitiveness // HON, ZBRA, Sato and Toshiba to target software market

Figure 24: Datalogics revenue 2018-2020, in mn. USD



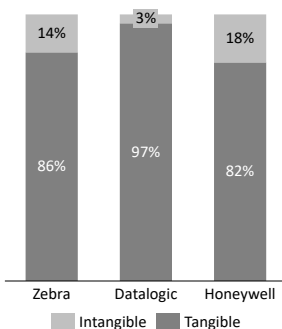
Source: Annual reports

Figure 25: Sato's quarterly sales divided in Japanese and Oversea sales, in mn. USD and %



Source: Annual reports

Figure 26: Revenue split by tangible and intangible offering of Zebra and competitors 2020, in %



Source: Honeywell investors conference, Annual reports

and third priority markets, respectively. Its competitive strategy bases on its broad offering of SIS and MV products, as well as a low cost strategy (Datalogic 2020; 2021c). Nevertheless, especially in the past two years, the escalating problems of the supply chains and Datalogic's reduced market power led to a sales slump of 26.5% from 2018 to 2020, making them less competitive (see Figure 24). **Sato:** Sato's long-term strategy is to sell holistically, meaning selling the solution, rather than only the product. Similar to its competitors, this anticipates a shift towards increasing software sales. Additional direct on-site maintenance and RFID tagging services ensure a deep understanding of customer needs and the establishment of strategic partnership. Sato reports in two segments: The Japan and Oversea segment. 1) In the Japan segment, Sato deepens existing customer relationships. 2) In the Oversea segment, it attracts international customers in India, Vietnam and the U.S., with a particular focus on the Retail, Healthcare and Food industries (Sato Holdings Corp. 2020). Figure 25 proves Sato's shifted international focus from 34% overseas sales in 2Q20 to 41% in 3Q21. We expect, that Sato's plan to concentrate on the U.S. market could anticipate slightly stronger, but still manageable competition to Zebra in the near future. **Toshiba TEC:** Similar to Zebra's, Honeywell's and Sato's vision, Toshiba TEC aims to transform its business operations from hardware to software solutions. For instance, the software solution *ELERA-Retail* launched in 2021 increases customer touch points and connects to data services, allowing for cross selling opportunities. With its Retail segment, Toshiba TEC focuses on extending expertise in solely one specific vertical in contrast to its competitors. In the APAC business, Toshiba TEC aims to further invest in strategic retail partnerships. In the Oversea business, it plans to acquire new customers by reinforcing sales functions and to leverage recurring maintenance services and end-to-end software solutions (Toshiba TEC 2021). Toshiba TEC shows similar weaknesses as Sato, namely leveraging their overseas sales activity. Nevertheless, Toshiba's deep retail expertise could pose a threat to Zebra's largest vertical segment.

Our analysis shows, that four out of five AIDC providers are aiming to shift towards more solution and software-oriented business models in order to participate in the additional software TAM volume of \$15bn. As shown in Figure 26, Honeywell accounts for 82% hardware and 18% software sales in their productivity solutions segment, whereas Zebra only reports a 86%/14% split. This clearly exposes the close competition between Honeywell and Zebra and might explain Zebra's recent software acquisitions of Antuit.ai (Sep 2021), Adaptive Vision (May 2021) and Reflexis (Sep 2020).

Recent M&As in AIDC
 industry support overall trend
 to expand into software

Software Mergers & Acquisitions

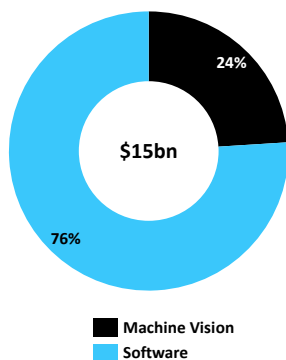
The shift in the AIDC market from hardware to software is additionally proven by the analysis of recent strategic acquisitions (Krebs, Gupta, and Clarke 2021): For instance, Honeywell's \$1.3bn acquisition of Sparta Systems, a leading quality management software provider, further strengthens its SaaS offering (Honeywell 2020). While Toshiba TEC acquired a minority stake in Touch To Go SKK in Sep 2021 to accelerate its vision of building unmanned retail stores (Toshiba TEC 2021), Sato's most recent acquisition of DataLase supplements its printing software portfolio dates back to 2017 (Sato Holdings Corp. 2019). Datalogic "considers M&A not as an extraordinary activity but more as a business as usual" (Datalogic 2021a). Although not software driven, Datalogic acquired in Feb 2021 M.D. Group to broaden its presence in the Industrial Automation and Sensing market (Datalogic 2021c). As illustrated in Table 5, our analysis proves the recently increased software driven M&A activity of Zebra's main competitors. We expect strategic acquisitions to remain an important driver, enabling companies to gain a competitive edge in the market. We expect that Zebra's main competitor Honeywell will strongly expand its currently 18%/82% intangible/tangible product split, as shown with its recent software acquisitions (see Figure 26).

Table 5: Competitors most recent AIDC (software) acquisitions 2017-2021

Acquirer	Target	Segment	Year
Toshiba	Touch To Go	Cashierless Retail Prov.	2021
Datalogic	M.D.	Ind. Automation	2021
Honeywell	Sparta System	Quality Mgt Software	2020
Honeywell	SineHQ	Workplace Software	2020
Honeywell	Flux	Warehouse Mgt Software	2018
Sato	Argox	Mob. Comp, Scanner, Print.	2017

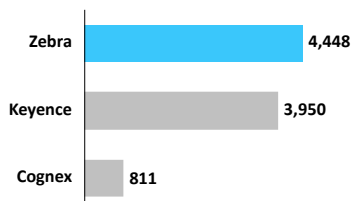
Source: Company websites, Bloomberg, Crunchbase

Figure 27: AIDC software and MV market 2020, in bn. USD



Source: Analyst estimates, Yole Développement (2021a), VDC Research

Figure 28: Zebra's revenue against its MV comparables 2020, in mn. USD



Note: Illustrated revenues entail additional, not only MV related revenues

Source: Annual reports

Zebra is the market leader in its operating product and vertical markets. This can be traced back to Zebra's extensive geographic reach, competitive product offerings, excellent R&D and partner network capabilities, as well as industry-leading software expertise. Nonetheless, we expect Zebra to face strong competition from Honeywell, which has a similar geographical footprint, a similar sized partner network, as well as the capacity to leverage internal group resources and know-how. Despite the fact that Datalogic and the asian competitors have great scanning and printing capabilities, we expect a weaker headwind for the following reasons: 1) As Datalogic's revenue declined in 2020 as a consequence of rising global supply chain challenges, it will most likely focus on internal reorganization rather than external competition. 2) The asian competitor's low scalable sales strategy and weak geographical overlap will harm their competitiveness.

Competitive Landscape AIDC Software Market

The last acquisitions of Adaptive Vision, Fetch Robotics and Reflexis allowed Zebra to increase penetration of the adjacent \$15bn AIDC software and MV market. With Zebra's core AIDC hardware product portfolio, customers are enabled to sense physical workflows and translate them into digital footprints. The huge opportunity of this trend lies in analyzing and understanding these data and acting accordingly

ZBRA shows strong prospects to successfully enter estimated \$10bn machine vision & software market, due to industry leading capabilities acquired 2019-2021

Figure 29: Zebra's Sense-Analyze-Act framework

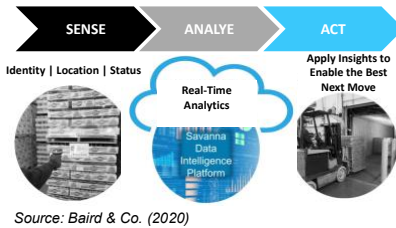


Figure 30: Workforce Management Provider, Data Quadrant Dec. 2020

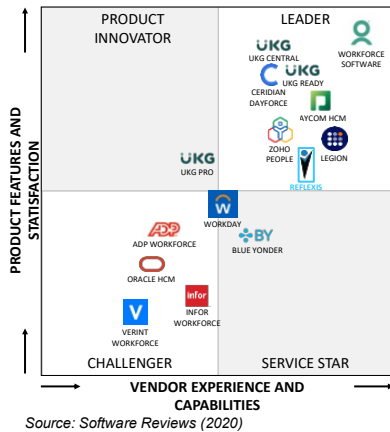


Figure 31: Warehouse Management - Auto-nomous Mobile Robots Provider Jul. 2021

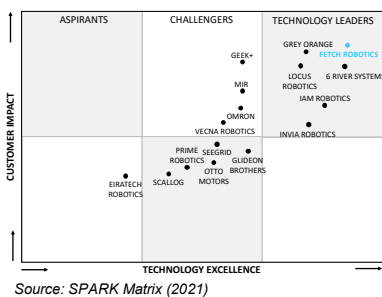
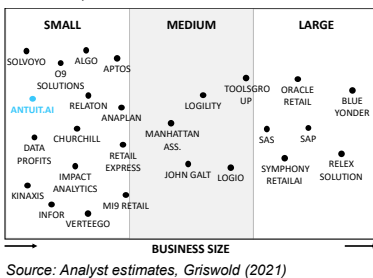


Figure 32: Workflow Management Provider, Feb 2021



in real-time (see Figure 29). At the latter, the estimated \$3.6bn large MV and \$11.4bn large software market come into play (see Figure 27). The respective vendors differ in their product offering: 1) MV provider offer both, the fixed installed cameras to track e.g., assembly lines in manufacturing processes as well as the software as the key MV component to intelligently detect, for instance, production defects. 2) Software providers focus on solutions along the whole supply chain like workforce, warehouse or workflow management.

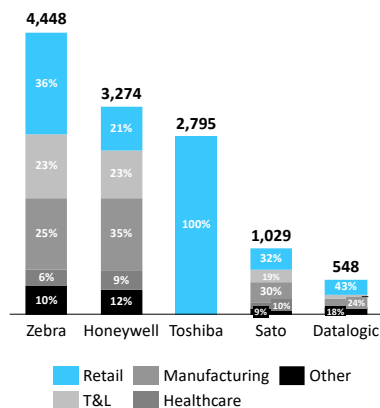
As of 2019, leading MV provider such as Keyence and Cognex hold a market share of 17% and 14% respectively in the MV market (Yole Développement 2021a). The manufacturing industry, which is increasingly investing in trends like robotics and IoT, represents the largest vertical driver of the MV market. Since a rising amount of manufacturing activities is outsourced towards Asia, especially China, this geographical market is predicted to grow significantly (Yole Développement 2021b). Additionally, the MV market undergoes rapid consolidation, with 11 acquisitions being reported in 2021 (Tödt et al. 2021). For instance, the acquisition of Cortexica as the market leader in MV libraries, enabled Zebra the successful entry into the MV market.

The supply chain management (SCM) software market in contrast is occupied by software vendors in the area of workforce, warehouse, and workflow management, as illustrated in Figure 30, Figure 31 and Figure 32. Although the markets seem fragmented, Zebra's acquired software portfolios such as Reflexis and Fetch Robotics are positioned as leaders in their submarkets. The following facts let us assume that Zebra will successfully capture market share in the software market: 1) Zebra's mission to connect its AIDC hardware products with software capabilities, and thus to offer end-to-end solutions, qualifies Zebra as a strategic business partner. Customers are expected to rather rely on a holistic solution offering from a single provider, than sourcing multiple solutions from a variety of providers. 2) Zebra has an extensive customer and partner network, which eases cross-selling from sole hardware to connected end-to-end solutions.

Concludingly, Zebra has entered a competitively fragmented market that until recently was largely untapped. By acquiring market leading expertise in the form of M&A, we expect Zebra to successfully capture market presence in both, the MV and software market. Our optimistic expectations are also supported by Zebra's most recent press releases (Dec 2021) about its ranking as Top Software Vendor in 2022 (Zebra Technologies 2021e). Additionally, Zebra has already been awarded twice as the best indoor location provider in the industry by Gartner (Gartner 2021). Hence, we consider the possibility of Zebra acquiring faster than expected momentum in the MV and software sectors in the *Scenario Analysis* section.

Retail: On demand shopping behavior of end-consumers & Covid accelerate retailers' need of productivity enhancing solutions

Figure 33: Revenue split by vertical of Zebra and competitors 2020, in mn. USD

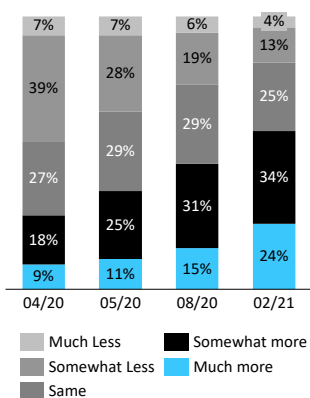


Source: Analyst estimates, Annual reports, Zebra 1Q20 - 4Q20 investors presentations, Honeywell investors conference

Note:

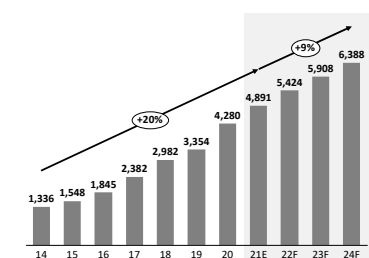
VDC Research is a B2B technology research center that advises Zebra and its competitors on topics such as market size, market development and market entry

Figure 34: Survey about effectiveness of new omnichannel sales model in reaching and serving customers 2021, in %



Source: McKinsey & Company; Harrison et al. (2021)

Figure 35: Global retail e-commerce sales 2014-2024F, in bn. USD



Source: Statista and eMarketer (2020)

Industry Trends by Verticals

Zebra and its competitors report their 2020 revenues by industry. In absolute terms, Zebra is the clear leader in all verticals except for the retail industry, which is dominated by Toshiba TEC due to its exclusive retail industry focus (see Figure 33). The following describes current trends and examines Zebra's main verticals.

Retail

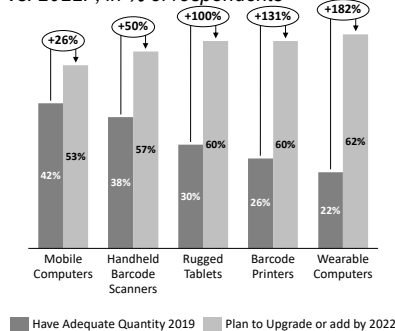
Omnichannel shift: The pandemic shifted user's online shopping behavior across generations towards new solutions like buy online pick up in store (BOPIS), buy online return in store (BORIS) or drive & collect (Datalogic 2021c). To increase agility and compensate for the decline of in-store sales, retailers increasingly invest in omnichannel solutions and hence devices like mobile computers and scanners. According to VDC, these trends will also continue in post pandemic times, as digital laggards attempt to catch up (VDC Research 2021). This is also supported by McKinsey's survey about the effectiveness of omnichannel sales models, presented in Figure 34: Pre-Covid (Apr 2020), 54% of respondents state omnichannel models to be equally or more effective than conventional sales model, compared to 83% during Covid-19 (Feb 2021) (Harrison et al. 2021).

Higher consumer in-store expectations: When buying in-store, shoppers demand a frictionless shopping experience including convenience, product availability, accurate pricing, and speed of processing. To satisfy these consumer needs, more and more front-line Retailers are equipped with technology and automation solutions (Zebra Technologies 2020e). For example, the use of wireless IoT solutions, like real time location systems, mobile computers, and handheld scanners enable accurate visibility of inventory so new products can be ordered automatically if they should run out of stock (Krebs 2020). Advanced analytics software additionally allows to evaluate customers' preferences and to accurately predict future demand (Datalogic 2021c).

Safety regulations and cashier-free stores: Since the beginning of the pandemic, retailers are forced to comply with in-store safety regulations, accelerating investments in 1 front-line worker to 1 mobile device deployment models, contactless self-scanning or self-checkout solutions. While seven to eight years ago there used to be 10 front-line workers to 1 device deployments, the recent shift to 1-to-1 deployment models represents tremendous growth potential in the mobile computing segments of AIDC vendors (Zebra Technologies 2021a). Also, innovative advancements toward cashier less retail stores, such as "Amazon Go" concept stores, are driving investments in hardware and software for automated data capture (Datalogic 2021c; Krebs, Adelson, and Clarke 2020).

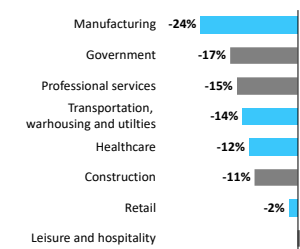
T&L: Covid induced increase in e-commerce & labor shortages drive investments in productivity enhancing solutions and last mile delivery

Figure 36: Result of T&L survey about investment plans in AIDC products 2019 vs. 2022F, in % of respondents



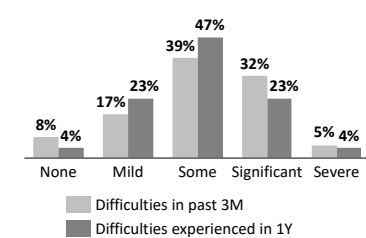
Source: Warehouse vision study: Zebra Technologies (2019)

Figure 37: Monthly hires per job opening 2021E average vs 2020 average, in %



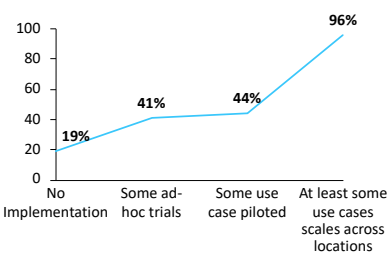
Source: Barron's: Klein (2021)

Figure 38: % of CFOs who report the following levels of recruitment difficulties of labour shortages experienced by their business over the last 3M and the level they expect in 1Y 2021, in %



Source: Deloitte: Stewart et al. (2021)

Figure 39: Ability of respondents to respond to crisis 2021, in %



Source: McKinsey & Company: Agrawal et al. (2021)

Transportation and Logistics

Increased e-commerce sales and shorter delivery times: The increasing supply of e-commerce platforms, such as Amazon or Alibaba, as well as the stay-at-home policy due to the Covid-19 pandemic accelerated the global e-commerce sales as illustrated in Figure 35. The market grew at a CAGR of 20% from 2014 to 2021E and is expected to grow further at a CAGR of 9% from 2021E to 2024F. This requires the T&L industry to fulfill an increased number of online orders and optimize their last-mile delivery services (Krebs 2020). Additionally, services like Amazon Prime or Alibaba's membership systems amplify a "I want it now"-mentality, wherefore customers expect ever shorter delivery times. The T&L industry is addressing this rise in parcel delivery by increasingly investing in digitization and productivity enhancing solutions (see Figure 36). For instance, warehouse and SCM solutions, mobile devices, or real time location systems enhance worker's efficiency and guarantee a quicker and more consistent T&L workflow performance (Zebra Technologies 2019).

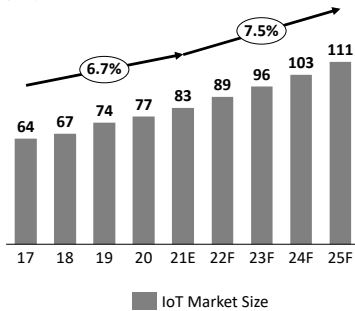
Labour shortage in warehousing sector: As shown in Figure 37, current labour shortages, especially in the manufacturing (-24.1% monthly hires/job opening_{2021E} vs. monthly hires/job opening₂₀₂₀) and transportation industry (-13.7%) significantly threaten the functioning of supply chains (Klein 2021). A survey of 57 CFOs of leading companies in the UK illustrates the seriousness of the labour shortages (see Figure 38): As of Sep 2021, 39% claim to face "some" and even 32% claim to face "significant" difficulties with labour shortages and recruiting in the last three months (Stewart et al. 2021). These labour shortages and the pressure of keeping up with increases in e-commerce demand are forcing the supply chain to revolutionize towards AI-driven workflows, workforce automation collaboration and operational visibility (VDC Research 2021). This greatly rises productivity, reduces manual operations and encourages investments in AIDC products (Zebra Technologies 2019; Datalogic 2021c).

Manufacturing

Manufacturing transformation towards Industry 4.0: The rising trend around Industry 4.0 and the pressure to build more resilient and diversified supply chains to avoid future crises are driving investments in multi-technology adoption and product interoperability at a high pace (Datalogic 2021c). A study of McKinsey about the pre- and post Covid-19 perception of Industry 4.0 reveals, that out of 400 globally surveyed companies, 96% report to have at least some use cases scaled across locations (Figure 39). 81% plan to selectively implement Industry 4.0 solutions in priority areas and 50% indicate "technologies connecting end-to-end

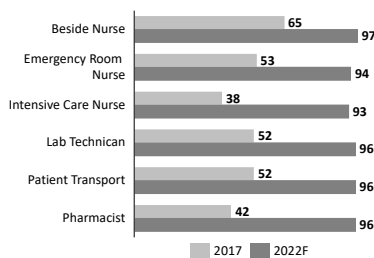
*Manufacturing & Healthcare:
Supply chain diversification &
increased hospital occupancy
drive investments in
productivity enhancing
solutions*

Figure 40: Internet of Things market size projection 2017-2025F, in bn. USD



Source: Statista and Markets and Markets (2020)

Figure 41: Mobile device usage prediction in the healthcare sector 2017 vs. 2022F, in %



Source: 2022 Hospitality vision study: Zebra Technologies (2017)

value chain from suppliers, manufacturing, logistics, and customers for better visibility, planning, and control” as their focus technologies when implementing Industry 4.0 use cases (Agrawal et al. 2021). This shows a rising trend towards investments in Industry 4.0 use cases and related AIDC products.

Technological advancements and competition: Technological advancements in the area of track & traceability (Blockchain, IoT, RFID), connectivity (5G) and automation (Robots, Drones) offer manufacturers the opportunity to adapt equipment and facilities faster and more flexible to rapidly changing consumer and production demands (Schattelman and Stephan 2021). Together with rising pressure of competition, manufacturers are expected to steadily invest in innovation and productivity enhancing solutions (see Figure 40).

Healthcare

Aging population, chronic diseases, and labour shortages: Factors like an aging population and more frequent chronic diseases accelerate the demand for intensified patient care and service. Combined with labour shortages and technologically limited healthcare capabilities, these problems demand healthcare institutions to progressively invest in technology and automation solutions. A survey conducted among 1500 nurses, IT executives and patients revealed, that by 2022F, the percentage of nurses using mobile devices is estimated to rise from 65% in 2017 to 97% in 2022F (see Figure 41). This allows healthcare professionals to spend more time providing direct care to the increasing number of patients and minimizes administrative overhead (Zebra Technologies 2017).

Covid-19 accelerated digitization trends in healthcare industry: The pandemic forced healthcare facilities to improve their capabilities to track and digitize the distribution and storage of Covid-19 vaccines. Other transformative technology trends, such as remote patient monitoring and telehealth, facilitate patient support while maintaining social distancing and reducing waiting times. In another survey among 500 senior-level hospital leaders, 8 out of 10 decision makers confirm that the pandemic expedites future investments in health care technology (Zebra Technologies 2021d). The industry trends and drivers described above serve as the basis for our sales forecast, which is described in more detail below.

ZBRA's software transformation expected to persist until 2031 // Sales forecasted based on top-down approach and triangulated from four different perspectives

Forecast and Valuation

General forecasting approach

We deploy a three-stage DCF model for the valuation of Zebra's equity consisting of a detailed forecasting period for the years 2021E to 2026F, a subsequent transitional period until 2031F, and a perpetuity for the terminal value. This approach is intended to take into account that the company, most likely, will not yet be in a steady state in 2026F due to an assumed ongoing software transformation of the business. By 2031F and thereafter, we expect a sustainable *Hardware/Software & service* sales split of approx. 75%/25% - compared to 86%/14% in 2021E. As a result, Zebra's gross margin is estimated to moderately expand during the transitional period, as the intangible business operates with richer gross margins. Going into perpetuity, we assume that the 2031F financials at the end of the transitional period can be considered a steady state. We additionally triangulate the results of the DCF analysis using relative valuation.

Revenue Forecast

Methodology: Table 6 shows the split between Zebra's inorganic and organic sales growth throughout the years including 2021E. Our sales projections 2022F-2031F are solely based on the currently existing portfolio of companies and solutions and do not include any future sales volume potentially acquired through M&A activity.

Zebra's revenues are forecasted based on a top-down approach, meaning estimating future market size and growth as well as market share development. All referenced market sizes are presented on a global scale, corresponding to Zebra's global market presence. We decided for this top-down approach due to the following reasons: 1) No explicit information is available about Zebra's product portfolio's prices, nor respective quantities sold. 2) Since Zebra is mainly selling indirectly via distributors, customers range from SMEs to large international corporates, making it impossible to estimate the average revenue per customer and hence to apply a bottom-up approach.

We estimated Zebra's revenue for the periods 2021E onwards with averaging growth rates derived out of four approaches: 1) Revenue Forecast by Products, 2) Revenue Forecast by Verticals, 3) Revenue Forecast by Industry CapEx and 4) Revenue Forecast by Management Guidance. We decided to apply four approaches to increase validity and triangulate results. Approach 1 and 2 use the following equation to estimate future revenues.

$$\text{Revenue } 202XE = \text{Market Share } 202XE \times \text{Market Size } 202XE$$

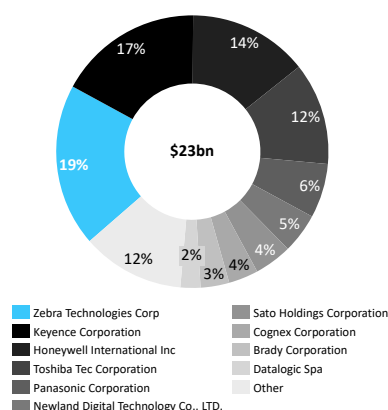
Table 6: Inorganic sales growth 2018-2021E, in % and mn. USD

	2018	2019	2020	2021E
Sales	4,218	4,485	4,448	5,625
Sales growth	13.3%	6.3%	-0.8%	26.5%
Organic growth	11.1%	5.5%	-0.9%	24.2%
Inorganic in %	2.2%	0.8%	0.1%	2.3%
Inorganic in mio. USD	83	35	3	101

Note: YoY reported inorganic growth refers to growth resulting from past 12-month acquisitions at the respective reporting date.

Source: Zebra earnings release slides and analyst estimates

Figure 42: AIDC hardware and software/MV market size 2020, in bn. USD

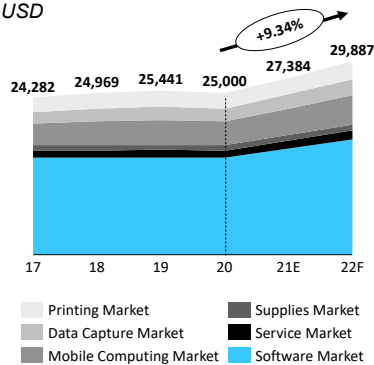


Note: Deviations to the \$25bn TAM estimated by VDC and management might stem from small AIDC- and MV-vendors, who did not publicly report 2020 revenues and were thus neglected in the market size estimation

Source: Analyst estimates, Annual reports

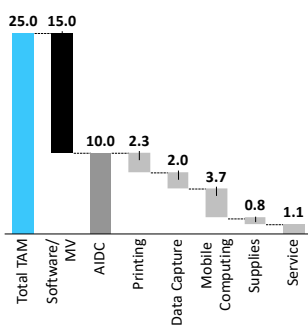
Approach 1: Market growth from product perspective at CAGR of 9.34% // Constant hardware & growing software market shares

Figure 43: Market growth projections by product category 2020 - 2022F, in mn. USD



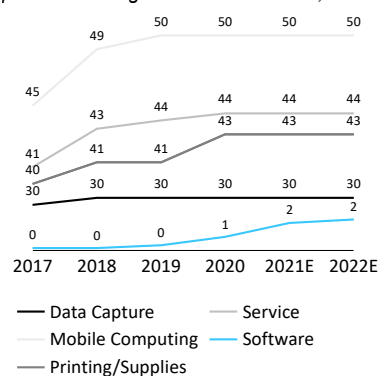
Source: Analyst estimates, VDC Research

Figure 44: AIDC market split 2020, in bn. USD



Source: Analyst Estimates, Baird & Co. (2020)

Figure 45: Zebra market shares by product subsegments 2017 - 2022F, in %



Source: Analyst estimates, Baird & Co. (2020), 1Q20 - 3Q21 earning calls

Approach 1: Revenue Forecast by Products

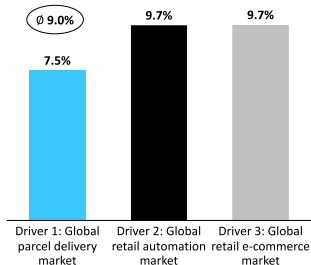
As described in the *Industry Overview* section, we divide Zebra's product offering into AIDC hardware and AIDC software. In the following, we describe our assumptions about the future market size and growth as well as Zebra's predicted market share development in each of these markets.

Market Size: Management and VDC Research estimate the AIDC hardware and software market in 2020 at \$10bn and \$15bn, respectively. As illustrated in Figure 42, we triangulated these predictions by accumulating AIDC-, MV- and supply chain software vendor's normalized revenue, and resulted in a TAM of \$23bn. Hence, VDC and management predictions seem reasonable and serve as basis for our revenue forecast. On the **hardware** side, the mobile computing market accounts for 37.3% of the AIDC hardware market and therefore represents the largest sub-market. This is followed by the printing and data capture market with approx. 22.9% and 20.3%, respectively. We support VDC's projections, that each hardware submarket will rise at a YoY growth rate of 8-12% between 2020/2021E and 2021E/2022F (see Figure 43). On the **software** side, we assume the \$15bn AIDC software market to grow as the weighted average growth of the global workforce solution and supply chain solution markets. Combined, with the \$10bn heavy AIDC hardware market projections, this results in a CAGR of 9.34% from 2020 to 2022F (see Figure 43). This projected growth increase seems reasonable to us: Covid-19 increased the pressure on supply chains to 1) digitize their operations and to 2) enhance their front-line workers' productivity. To remain competitive and keep up with the pandemic induced digitization dynamic, we predict that retailers, manufacturers, hospitals, and T&L corporations will catch up their in 2020 decommissioned AIDC investments and increasingly invest in 2021E and beyond.

Market Shares: As illustrated in Figure 45, Zebra positions itself as the market leader in the three largest AIDC **hardware** sub-markets by holding 50%, 43%, and 30% market share. The historical development of Zebra's market shares clearly shows that Zebra has gained momentum in the market. Especially the favorable development of Zebra's market share in the mobile computing segment from 45% in 2017 to 50% in 2020 is driven by Zebra's superior handling of the Windows-Android system migration. Nevertheless, since competition is steadily increasing, especially from Honeywell, we do not expect Zebra to gain further market shares in our base case. Thus, hardware market shares are kept constant at their 2020 levels for the forecast period. On the AIDC **software** side, Zebra increased its market share from 0.3% to 0.9% due to recent software acquisitions from 2019 to 2020. Management announces for instance in the 4Q20 Earnings Call, that the

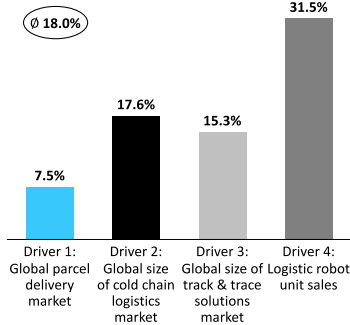
Approach 2: Market growth from vertical perspective at CAGR of 8.29% // Constant vertical hardware & growing software market shares

Figure 46: CAGR of retail market drivers 2020 - 2026F



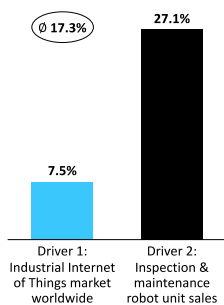
Source: Statista, Transport Intelligence, and Logistics Management (2021), Statista and Allied Market Research (2021), Statista and eMarketer (2020)

Figure 47: CAGR of T&L market drivers 2020 - 2026F



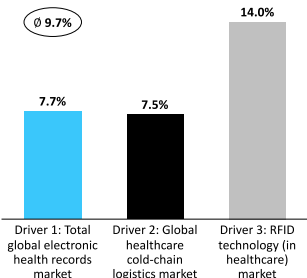
Source: Transport Intelligence, Logistics Management, and Statista (2021), Allied Market Research (2020), Statista and The Insight Partners (2019), IATA et al. (2021), IFR (2020)

Figure 48: CAGR of manufacturing market drivers 2020 - 2026F



Source: IFR (2020), Statista and Markets and Markets (2020)

Figure 49: CAGR of healthcare market drivers 2020 - 2026F



Source: Statista and VMR (2018) Statista, PR Newswire and Global Industry (2021), Statista and Grand View Research (2018)

Reflexis business grew at around 50% since the acquisition (Zebra Technologies 2020b). We predict this gain in software market share to keep rising to 2.0% in 2022F, due to Zebra's 1) cross-selling capabilities and 2) extensive partner network. As a result, approach 1 results in revenue growth predictions of 12.6% for 2021E and 11.1% for 2022F (see Table 7).

Approach 2: Revenue Forecast by Verticals

Based on the analysis provided in the *Industry Trends by Verticals* section, we identified trends and drivers for each of Zebra's operating vertical markets. In the following, we describe our assumptions about how these drivers influence each vertical's future market growth.

Market Size: We expect the **Retail** AIDC hardware market growth to be driven by the 1) global parcel delivery market, 2) global retail automation market and the 3) global e-commerce market (see Figure 46). Most notably, the e-commerce and the BOPIS market experienced high growth of more than 14% during the pandemic due to safety and social distancing regulations as well as the increasing convenience needs of shoppers. This results in an increased need of retailers to equip front-line workers with mobile computers, barcode and POS scanners (Insider Intelligence 2021). Buyers are expected to maintain this trend, although with a high single-digit CAGR from 2021E to 2026F. The **T&L** AIDC hardware market is accelerated by drivers shown in Figure 47. Especially sales of logistics robots, analogous to the Fetch Robotics product offering, experienced drastic growth of more than 50% in the Covid-19 era as logistics companies increasingly digitized their supply chains to better address labor shortages. To precautionary stabilize supply chains, companies are forecasted to invest less aggressively but steadily in robotics in 2022F+. We predict the **Manufacturing** AIDC hardware market to be driven by investments in IoT and autonomous mobile robots (see Figure 48). Again, especially in times of Covid, where production orders pend up, fixed industrial scanners and robotics assisted in reducing production bottlenecks. Strong growth is also predicted in the **Healthcare** AIDC hardware market. The market is predicted to be driven by the 1) global electronic health records market (e.g., resulting in increased demand for data capture), 2) global healthcare cold chain logistic market (e.g., resulting in increased demand for thermal printers and labels) and 3) RFID healthcare technology market (see Figure 49). **Other** AIDC hardware markets such as the governmental sector are predicted to be driven by, among others, military logistics investments translating into a higher demand for (rugged) mobile computers or tablets. The AIDC software market is assumed to grow similar to approach 1. Combined, the projected growth rates result in an overall CAGR of 8.29% from 2020 to 2026F (see Figure 50).

Approach 3: Historical Industry CapEx and ZBRA's vertical sales seem to be aligned // CapEx perspective indicates growth of 20.2% for 21E and 4.6% for 22F

Figure 50: Market growth projections by verticals 2020 - 2026F, in mn. USD

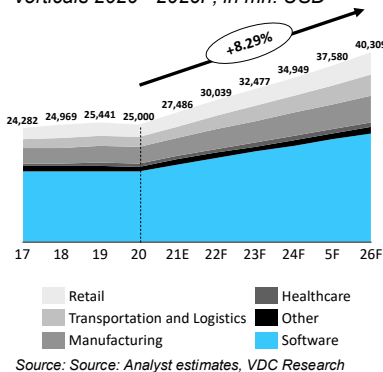


Figure 51: Zebra's market shares by vertical 2017 - 2026F, in %

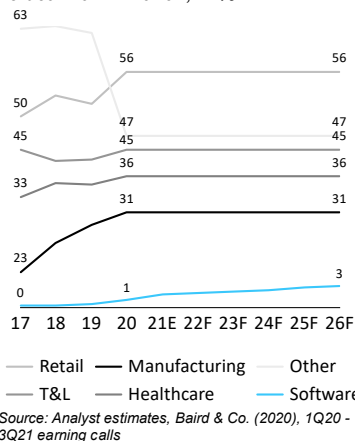
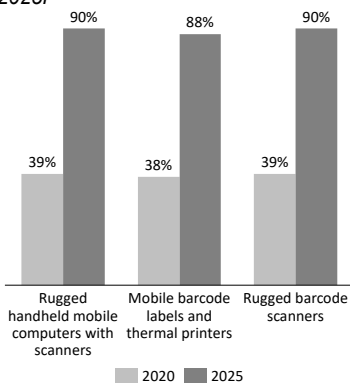


Figure 52: Survey about adoption rates of selected AIDC products 2020 vs 2025F



As plausibility check, we triangulated the projected market sizes derived of approach 1 and 2 in two ways: First, we compared the projected market sizes derived by the two approaches (see Figure 43 and Figure 50) and observed only minor differences of 0.37% for 2021E and 0.5% for 2022F. Second, we compared the growth rate results per vertical with Zebra's internal estimates about adoption rates of AIDC products: According to a study among 5,400 consumers and industry experts (Manufacturing, T&L, Wholesale and Retail), as of 2020, 39% of the respondents did not adopt rugged handheld mobile computers. As of 2025F in contrast, the adoption rate is predicted to be 90%. The survey results illustrated in Figure 52 evidently confirm, that as of 2021, the market is not even closely saturated and there is still additional room for product adoption and reasonable growth.

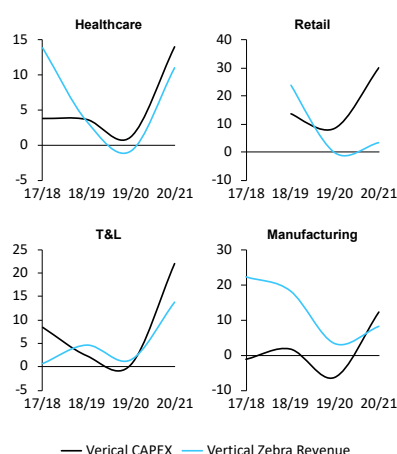
Market Shares: As illustrated in Figure 51, Zebra claims 56%, 45%, 31% and 36% market share in 2020 in the AIDC Retail, T&L, Manufacturing and Healthcare hardware industries, respectively. Similar to the reasoning of approach 1, we expect Zebra not to be capable of gaining further market share due to increasing competition, especially from Honeywell and Toshiba TEC. Hence, we assume Zebra's market shares to stay stable at the 2020 levels in each vertical, but account for the scenario of declining market shares in the *Scenario Analysis* section. Similar to approach 1, we predict the AIDC software market share to rise from 0.9% in 2020 to 3.0% in 2026F.

Approach 3: Revenue Forecast by Industry CapEx

Approach 3 entails the hypothesis, that an increase in industry CapEx could have an effect on Zebra's revenue. Although only a limited amount of data points available, we plotted the YoY growth of each vertical's revenue growth against the respective industry CapEx YoY growth. As Figure 53 shows, the variables seem to behave similar for the period 2017-2021E. Hence, we considered the industry CapEx growth as reasonable proxy for future market growth. According to S&P's Global Corporate CapEx study, the CapEx in the retail industry is forecasted at a YoY growth rate of 25.6% and 7.8% for 2021E and 2022F, respectively (T&L 2021E: 22%, T&L 2022F: 3%, Manufacturing 2021E: 12.3%, Manufacturing 2022F: 3.3%, Healthcare 2021E: 14%, Healthcare 2022F: -1%). Consequently, approach 3 results in a vertically combined revenue growth rate prediction of 20.2% for 2021E and 4.6% for 2022F (see Table 7).

Approach 4: Longer term revenue growth 5% // Combined: Extraordinary revenue growth in 21E due to Covid, moderate growth until 26F and constant growth as of 27F+

Figure 53: Zebra's YoY vertical revenue growth plotted against YoY vertical CapEx growth 2017 - 2020, in %



Source: S&P Global (2021), 1Q20 - 4Q20 investors presentations

Table 7: Combined weighted revenue growth rates 2021E - 2031F

	DP						TP
	2021E	2022F	2023F	2024F	2025F	2026F	2027F+
Approach 1	12.6%	11.1%					
Approach 2	13.7%	11.2%	10.0%	9.4%	9.7%	9.8%	
Approach 3	20.3%	4.7%					
Approach 4	26.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Weighted GR	26.5%	9.9%	7.5%	7.2%	7.4%	7.4%	5.0%

Source: Analyst estimates

Approach 4: Revenue Forecast by Management Guidance

The fourth approach considers the revenue growth projections given internally by the management. In the short term, 12% QoQ growth is guided for 4Q21E, whereas in the longer term, management's growth guidance amounts to 5% YoY.

Combined Revenue Forecast

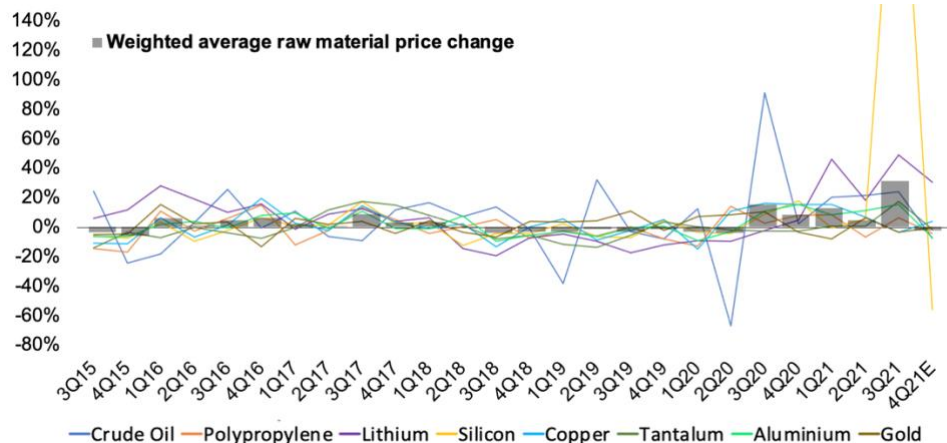
Our final revenue growth estimates are calculated as a weighted average of the growth rates resulting from each of the four approaches. For 2021E, we rely on sales growth between 1Q21 - 3Q21, supplemented by management's sales growth guidance for 4Q21E. For 2022F, we assume a weighted average growth of all four approaches: The validity of the market growth rates predicted by VDC as one of the leading research centers in the field of AIDC, as well as our reasonable assumptions of stable hardware market shares and increasing software market shares derived from our *Competitive Landscape* sections, make us confidently weight the growth rates of approach 1 and 2 for 2022F with 40%. Approach 3 and 4 are weighted equally with 10%. For the rest of the detailed forecast period 2023F - 2026F, we equally weight the growth rates of management's guidance and our vertical forecast approach. For the transitionary period 2027F - 2031F, we align the revenue growth with management's longer term growth guidance of 5%. For the subsequent growth in perpetuity, please refer to the section *DCF Valuation*. By combining the growth rates of all four revenue forecast approaches, we result in final growth rates illustrated Table 7. We further adjust the weighting of the four approaches in the *Scenario Analysis* section and discuss resulting changes on our target share price.

Supply chain issues
depressing margins // Further
surging commodity prices and
longer-term premium freight
costs as major risks to
profitability

Free Cash Flow Forecast

COGS and Gross Margin: As there are no indications that Zebra's manufacturing outsourcing strategy is subject to change, COGS mainly consist of charges for raw materials and manufacturing services from Zebra's production partners. While a certain fluctuation of commodity prices can be considered normal, raw materials in general and specific materials relevant for the production of Zebra's products have experienced substantive price increases throughout the last year. While price increases were particularly strong between 3Q20 and 3Q21, we see price pressure easing very recently (see Figure 55). Figure 54 shows quarterly price fluctuations of selected commodities as lines and the weighted average change of Zebra's most relevant raw materials as bars.

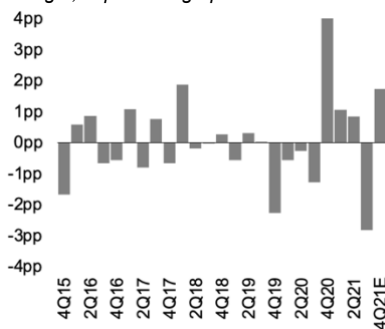
Figure 54: QoQ price fluctuations of selected commodities relevant for Zebra (lines); averaged (bars)



Source: Bloomberg, Analyst calculations

The comparison between quarter-over-quarter (QoQ) commodity price changes and Zebra's subsequent QoQ hardware gross margin changes in percentage-points (see Figure 54) did not yield a negative correlation. This might be explained with long-term manufacturing service contracts, commodity price hedging, and quantity effects in 2021. While one would expect a strong negative relationship between the two metrics, the actual correlation coefficient between the last 25 quarters average commodity price and gross margin volatility amounts to 0.515. However, management referenced in recent earnings calls that the company is incurring higher costs for components from their suppliers. To compensate for that, Zebra raised product prices for customers as of Sep 2021 (Zebra Technologies 2021b). This indicates that the company is generally able to hand along price increases to customers. Management expects product price increases to largely offset higher input costs (Zebra Technologies 2021c). Even though Zebra was able to pass along price increases to customers twice in less than two years, we expect a potential third price increase in the near future to be hardly realizable. Consequently, further surging commodity prices bear a significant risk for Zebra's

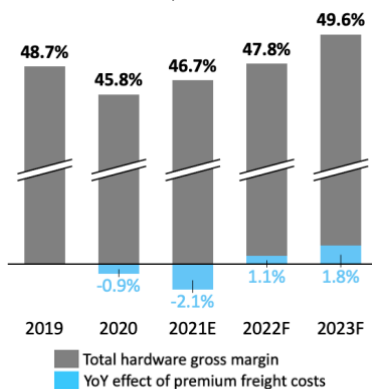
Figure 55: QoQ change of Zebra gross margin, in percentage points



Source: Quarterly reports and analyst estimates

Note: Past 25 quarters correlation coefficient between commodity price change Q_t and Zebra hardware gross margin in the subsequent quarter Q_{t+1} : 0.515. Hardware gross margin adjusted for premium freight costs in 2020-2021E to avoid distortion.

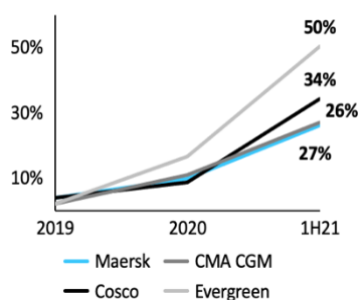
Figure 56: Zebra hardware gross margin and impact of changes in premium freight costs 2019-2023F, in % of sales



Source: 2021 earnings calls slides and analyst estimates

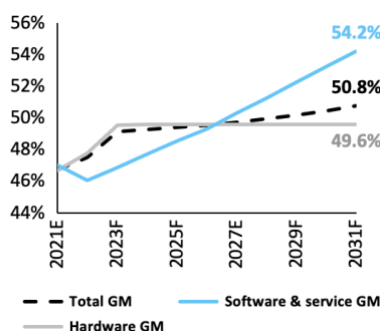
Software transformation expected to pull-up gross margin to nearly 51% by 2031F // SG&A expenses to level off at 14.9% of sales

Figure 57: EBIT margin development of selected global shipping companies 2019-2Q21, in % of sales



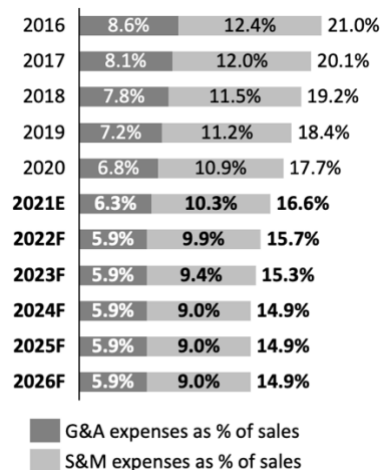
Source: Annual and interim reports

Figure 58: Forecasted gross margins, total and by tangibility 2021E-2031F



Source: Analyst estimates

Figure 59: SG&A expenses 2016-2026F, in % of sales



Source: Annual reports and analyst estimates

profitability. The pandemic induced supply and demand imbalances in the global logistics markets led to premium freight costs with significant impact on Zebra's hardware gross margin (see Figure 56). As both, sea and air freight rates have been surging further recently, we expect premium freight expenses to peak in 4Q21E, stay on a high level in the first two quarters of 2022F and start to decrease as of 3Q22F. As logistics providers will likely try to preserve a portion of their currently elevated margins (see Figure 57), we expect slightly higher freight costs than before the pandemic for 2023F and the following years. Even though frictions on the cargo markets should be settled by then. For 2024F onwards, no further hardware gross margin changes are anticipated. Nevertheless, we address the risk of persistent commodity price increases and peaking freight costs on margins in our *Scenario Analysis*.

While the gross margins in the software (69%) and service (34%) businesses per se are not expected to change significantly, we expect the combined *Software & service* gross margin to expand substantially by a steadily increasing software intensity of Zebra solutions and therefore a higher share of software revenue. The *Software & service* gross margin experienced strong structural growth of 12.3pp from 34.4% in 2019 to 46.7% in 2021E through Zebra's software acquisitions and accelerated digitization pressure on customers in its main verticals. Before further growing up to 54.2% until 2031F, *Software & service* gross margins will experience a slight dip in 2022F, as lower margin service sales fully recover from lows during the pandemic times. Figure 58 shows both segment gross margins as well as Zebra's total gross margin over the course of the years 2021E-2031F. Coming from a 86%/14% split between *Hardware* and *Software & service* sales, the software transformation of the business model is expected to result in a sustainable sales split of 75%/25%, pulling Zebra's combined gross margin up to 50.8% in the steady state.

SG&A expenses as a percentage of sales, consisting of selling and marketing (S&M) as well as general and admin (G&A) expenses, have been continuously decreasing over the course of the last 5 years, both aggregated and on a standalone basis (see Figure 59). S&M expenses as percentage of sales decreased by 0.4pp on average every year whereas G&A expenses decreased by 0.35pp. As the company's operations have been streamlined and cost-cutting programs were in place, we believe that future fix-cost degression in SG&A will not be possible on the same levels we saw in the past years. However, given management's focus on cost discipline, we expect SG&A as percentage of sales to have potential to moderately decrease further over the next two years and reach a steady state as of 2024F. We do not believe that absolute SG&A expenses can

Effective tax rate expected to increase substantially // NOPLAT growth currently accelerating but slowing down in transitional period

decrease as the business is growing substantially. In absolute terms, Zebra's SG&A expenses are forecasted to be \$912m in 2021E, breach the level of \$1bn in 2023F and grow to \$1.6bn by 2031F.

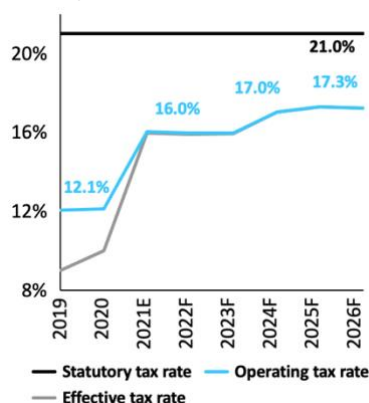
R&D: As we expect competition in the AIDC industry to stay high and Zebra is targeting new adjacent markets, R&D activity remains crucial for success. Therefore, we expect Zebra to invest in solution enhancement and product development at a level of 10.2% of sales, which is in line with prior years.

Debt: Given the fact that the management feels comfortable with the current level of outstanding debt in the form of term loans and the fact that major debt proceeds in the past have been linked to the Motorola acquisition, we expect Zebra to continue to operate at the current debt level. Hence future interest expenses are projected to be in line with 2021E. However, debt from lease liabilities is expected to scale with revenues. As a result, we see a nearly constant net debt to EV over the course of the next years.

Taxes: As shown in Figure 60, Zebra's effective tax rate had a spread of up to 12pp to the 21% corporate statutory rate in the United States. The operating tax rate, was significantly closer to the statutory rate. The primary sources for the discrepancy between statutory and effective tax rates in the past were lower tax rates in foreign jurisdictions, equity compensation that is partially deductible for CIT purposes, and federal R&D tax credits. Nevertheless, equity compensation deductions and R&D tax credits are expected to be persistent in the future. With profits growing, we expect Zebra's tax rate to gradually increase over the years to a sustainable level of 17.3% in 2026F mainly because of two factors: First, we expect the foreign rate differential to substantially decrease over the mid term, as a special agreement with the Singapore government, including a 11% instead of 17% tax rate, will cease 2024F. Also, tax rates in the major foreign jurisdictions of Zebra, namely England and Luxembourg, are 19% and 25%, respectively. Second, we expect the recently stipulated global minimum tax rate of 15% to be enacted by the U.S. government in 2022F. Therefore, we estimate a slightly higher impact from U.S. taxation of foreign earnings on Zebra's tax rate in the future.

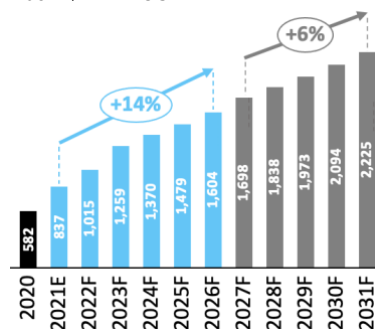
NOPLAT: As illustrated in Figure 61, NOPLAT is expected to grow with a CAGR of 14% during the detailed forecast period and with a 6% CAGR throughout the transitional period due to the following assumptions: 1) Strong anticipated revenue growth 2) gross margin changes and improvements over all forecasting periods, 3) positive fixed-cost effects in SG&A, but 4) offsetting higher operating tax rates.

Figure 60: Zebra's tax rates 2019-2026F, in % of pre-tax income



Source: Annual reports and analysts estimates

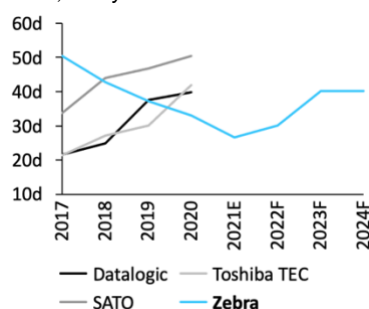
Figure 61: NOPLAT development and CAGRs for different growth periods 2020-2031F, in mn. USD



Source: Analyst estimates

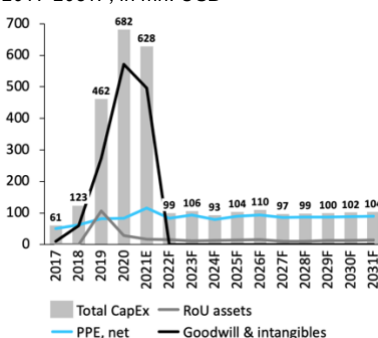
Cash conversion expected to decelerate again // Non-financial CapEx to increase with higher growth of the overall business

Figure 62: Cash Conversion Cycles 2017-2024F, in days



Source: Analyst calculations based on annual reports and own projections

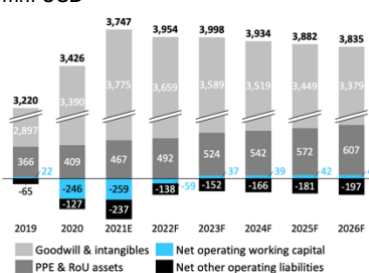
Figure 63: Total CapEx and by component 2017-2031F, in mn. USD



Note: Right-of-use lease asset change in 2019 distorted by initial on-balance recognition due to adoption of U.S. GAAP ASC842.

Source: Analyst calculations based on annual reports and own projections

Figure 64: Operating Invested capital, total and by component 2019-2026F, in mn. USD



Source: Analyst estimates

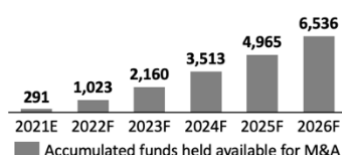
Zebra's cash conversion cycle (CCC), has experienced continuous improvement throughout the past years and started outperforming the competition's cycles in 2018 (see Figure 62). The CCC decreased by 23 days from 50 days in 2017 to only 27 days in 2021E. However, on the long run we do believe Zebra's CCC will drop back to a sustainable level of 40 days. This is due to the following factors: 1) 2020 was characterized by extraordinarily high expense accruals and revenue deferrals, both induced by the pandemic and 2) in 2021E and 2022F inventory is distorted through the current supply chain disruptions. Thus, for future periods we expect a slightly negative impact on free cash flows from working capital investment requirements compared to the current positive contribution during the pandemic (see also Figure 64).

In the *Financial Analysis* section, we have shown that the business historically could grow at 5%-10% YoY without overly investing in PPE, due to its manufacturing outsourcing policy. The high level of CapEx from 2018 to 2021E was caused by bustling M&A activity. However, since acquisition related Goodwill and intangibles are nearly impossible to forecast, we do not project cash outflows relating to those items nor incorporate future cash inflows from potentially acquired sales volume in our forecast. Forward looking, we expect non-financial CapEx, meaning CapEx without Goodwill and intangibles, still to be moderate but at a slightly higher level compared to prior years (see Figure 63). This is reasoned by the facts, that 1) 2021E is expected to yield extraordinarily strong sales growth and 2) our overall mid-term growth estimates are higher than the sales growth before the pandemic. While yearly net PPE investments averaged \$79m throughout the 5 years preceeding the pandemic, we project an average of \$91m for 2022F-2031F. Moreover, we expect additional operating leases for distribution centers, equipment and sales offices to contribute additional \$14m yearly to non-financial CapEx in the forecasting period. The increase in non-financial CapEx is connected to higher Furniture, Software, Office and Computer Equipment expenses as well as higher cost in connection with leasehold improvements. Depreciation expenses are estimated to amount to \$74m per year.

Operating invested capital, characterized by high intensity of Goodwill and other intangible assets, climbed considerably from 2019 to 2021E due to large value M&A deals (see Figure 64). This growth was partially offset by negative operating working capital and other operating liabilities due to the pandemic, as elaborated upon above. As a result of constant Goodwill for valuation purposes, Zebra's moderate CapEx investments and continued working capital management efforts, we expect only a slight increase in operating invested capital from \$3,747m in 2021E to \$3,814m in 2031F.

Share repurchases continue to create value for shareholders // Nearly constant future capital structure implies WACC approach for valuation

Figure 65: Non-operating invested capital **pro-forma** account funds held available for M&A activity 2021E-2026F, in mn. USD



Note: Equity investments amounting to \$117m are also classified as non-operating assets but kept constant in forecast, as no valuation impact

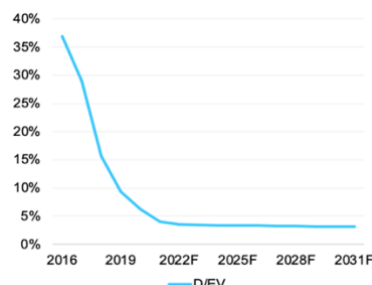
Source: Analysts estimates

Zebra's share repurchase program with an outstanding volume of \$728m is expected to be continued throughout the years. As a consequence, we model \$69m of buybacks every year from 2021E to 2031F. The management holds on to a zero dividend policy and does not intend to change this approach (Zebra Technologies 2020c). Therefore, we have modelled a pro-forma excess cash account *Accumulated funds held available for M&A activity*, which captures shareholder value in excess of cash outflows for share repurchases (see Figure 65). While we can not exactly predict M&A transactions, we expect Zebra to catch up with the high deal flow of the past two years. There are numerous investment opportunities potentially creating even more shareholder value than distributing these funds to investors now. Among others, potential M&A opportunities could lie within: 1) acquiring Datalogic's scanning business, 2) adding further capabilities in the recently entered MV market or, 3) consolidating the autonomous mobile robot market, once it matured (Santagate 2019).

DCF Valuation

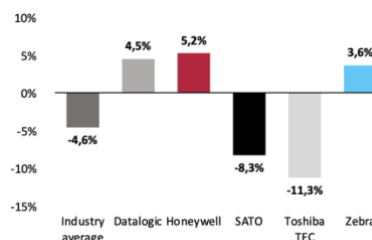
Methodology

Figure 66: Development of net debt to enterprise value 2016-2031F, in % of EV



Source: Analysts estimates

Figure 67: Net debt/enterprise value for Zebra and its competitors 3Q21



Source: Analysts estimates, Annual Reports

After the acquisition of Motorola's enterprise solutions, Zebra's capital structure was continuously subject to change due to the gradual downpayment of the debt proceeds used to finance the acquisition. The management does not target a strict capital structure, but follows a rather flexible capital structure band of 0-2.5x net debt to adjusted EBITDA (Zebra Technologies 2020b). During the 2Q21 and 3Q21 earnings webcasts, management indicates to remain comfortable with the current level of debt and does not plan major debt proceeds in the foreseeable future. As a result of constant debt but steadily increasing lease liabilities, we expect market value based net debt to enterprise value to be nearly constant in the future (see Figure 66). Furthermore, given the resulting low interest expenses, tax shields amounting to \$4m seem insignificant in relation to the enterprise value. Therefore, we deploy the WACC approach to value Zebra's equity by discounting the unlevered operating free cash flows with the WACC. To arrive at the fair equity value, we add the value of net non-operating assets and deduct the value of net financial debt as well as the outstanding intrinsic value of equity settled compensation. Consequently, the projected equity value is divided by total non-dilutive outstanding shares to obtain the 31st of December 2022 target share price.

We forecasted financials for the 4Q21E, the detailed forecasting period (2022F to 2026F) as well as the transitionary period (2027F to 2031F) to derive Zebra's future free cash flows. For the terminal value of the business, we estimated a perpetuity growth rate (g) derived from long-term real GDP growth estimates, long-term inflation expectations, as well as a company specific coefficient reflecting Zebra's

Perpetuity growth estimated at 2.26% // Risk-return revision in beta through pandemic yields uncertainty

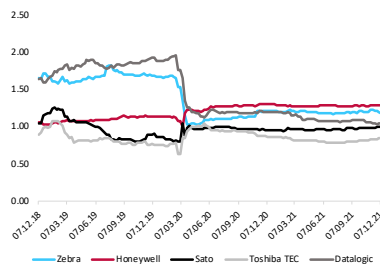
business in relation to the economy. For the global long-term real GDP growth we calculated an average of the estimates from IMF, OECD and Worldbank amounting to 3.05%. For the long-term U.S. inflation we considered the break-even between 10 year U.S. treasury bills and 10 year U.S. inflation protected treasury bills, as well as estimates from IMF, and the FED, averaging to 2.30%. For the company coefficient of 0.471, we estimated the proportion between the overall economy growth and Zebra business growth:

$$g = [(1 + \text{world real GDP}) * (1 + \text{U.S. inflation}) - 1] * \text{company coefficient}.$$

The resulting estimated perpetuity growth rate of 2.26% is slightly lower than long-term inflation expectations and well below long-term nominal GDP growth estimates.

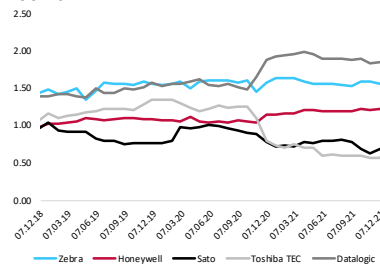
Discount rates

Figure 68: Rolling betas weekly 2018 - Dec 2021



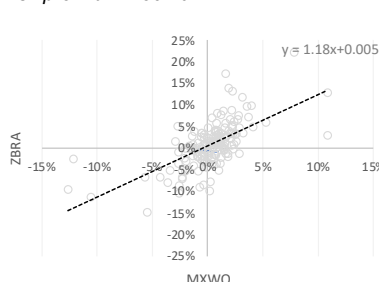
Source: Bloomberg

Figure 69: Rolling betas monthly 2018 - Dec 2021



Source: Bloomberg

Figure 70: Regression of Zebra's equity risk premium against MSCI World market risk premium Dec 2021



Source: Analyst estimates, Bloomberg

Cost of Equity (r_e) was estimated using the Capital Asset Pricing Model (CAPM) depicted in the following formula:

$$r_e = r_f + \beta_L * (r_m - r_f).$$

The proxy for the risk-free rate (r_f) was derived from the current yield-to-maturity (YTM) of 10 year U.S. government treasury bills, amounting to 1.44%. To obtain a fair estimate for Zebra's beta, we performed a regression of Zebra's equity risk premium against the MSCI World risk premium using both monthly and weekly data for the preceding 5 and 3 years, respectively. The weekly regression resulted in a levered beta of 1.18 with a standard error (SE) of 0.12 yielding a considerably tighter interval [0.95, 1.41] at the 95% confidence level than the monthly data (levered beta: 1.54, SE: 0.25, confidence interval [1.03, 2.5]). The weekly rolling beta analysis illustrated in Figure 68 reveals a sharp decrease at the start of the pandemic in March 2020 whereas this trend is smoothened in the monthly rolling beta analysis (see Figure 69). As shown in Figure 68, this pandemic induced beta adjustment seems not specifically bound to Zebra but rather affects the whole industry. We even recognize an industry beta convergence. Horstmeyer and Chaitanaya (2020) proved that the corona crisis reversed the risk-return profile of stocks from high volatility sectors (Technology, "Working from Home" (WFH)). This conclusion is supported by the fact that Zebra in specific profited from the increased digitization efforts induced by the Covid-19 pandemic as shown in the *Industry Trends by Vertical* section. We assume the weekly regression analysis and the lower levered beta of 1.18 as an accurate proxy for the future due to the following three reasons: 1) Zebra's accelerating shift from a sole hardware supplier towards a more software driven company and resulting lower operating leverage (see *Business Model* section) make us assume a lower forward-looking beta. 2)

Lower 1.18 weekly beta as proxy for future due to: software transformation, increasing customer dependence, and pandemic induced digitization boost // WACC of 7.17%

Table 8: Unlevered beta comparison between Zebra, AIDC hardware and software industry 2021, on a weekly basis

Entity	Unlevered beta
Zebra Technologies	1.15
AIDC Hardware Industry	1.06
AIDC Software Industry	1.01

Source: Bloomberg

By increasingly becoming a full-service solution provider, Zebra turns into a strategic partner on whom customers will depend even in times of crisis. 3) We expect the pandemic induced digitization boost to continue in the foreseeable future. The new corona mutation Omikron further affects supply chains, of which AIDC provider will profit. Concludingly, we triangulated Zebra's unlevered beta estimates with the unlevered beta of comparable companies in the AIDC hardware and AIDC software industry. Zebra's unlevered beta of 1.15 seems to be moving in the right direction towards the hardware and software industry average of 1.06 and 1.01, respectively.

For the expected market risk premium, we relied on academic research: McKinsey investigated market risk premia dating back to 1962 and expect a risk premium between 4.5% and 5.5% for global investors (Koller et al. 2020). As we assume our marginal investor to be globally diversified, we use the average of McKinsey's suggested range, amounting to 5.0%. As a result, our estimates for Zebra's cost of equity results in 7.31%.

Cost of debt (r_D) was calculated using 1) the 10-year YTM from Bloomberg's U.S. Technology BB+ fair yield curve amounting to 3.81%, 2) the annualized weighted default probability for the underlying rating of 0.83% and 3) the respective loss given default for loans of 31.0% (Moody's 2017). We deployed this approach as all major rating agencies rate Zebra with BB+/Ba1. Additionally, the company does not have bonds outstanding but instead only term loans maturing in approximately 3 years. The following formula results in a cost of debt estimate for Zebra of 3.55%:

$$r_D = YTM - \text{default probability} * \text{loss given default}.$$

WACC amounts to 7.17% and is obtained by combining cost of equity and pre-tax cost of debt through the following formula:

$$WACC = \frac{E}{EV} * r_e + \frac{D}{EV} * r_D * (1 - t).$$

As shown above, our forecasts imply a constant D/EV of 2.98% and a E/EV of 97.02% accordingly.

Scenario Analysis

The scenario analysis highlights four potential scenarios that are reflected in our target share price. These scenarios include the 1) Base Case scenario, 2) Revenue Breakthrough scenario, 3) Supply Chain and Freight Costs Disaster scenario and 4) Closely Followed Competition scenario. Each scenario results in its own target price, and the final share price as of 31st of December 2022 represents a weighted average of these four scenario prices.

Sc.2: Revenue breakthrough due to superior market presence & more successful software market penetration // Sc.3: Increased competition diminishes ZBRA's market shares

Base Case

Share Price: \$638

In the base case scenario, Zebra will continue to lead the AIDC hardware market due to 1) the favorable development of vertical and product revenue drivers and 2) the competition remaining at the current level. Furthermore, with the acquired industry-leading software capabilities, Zebra will successfully expand its presence in the AIDC software market. Margins are expected to improve gradually as a result of 1) Zebra's steady expansion towards a 75%/25% tangible/intangible split and 2) gradual improvement of freight costs. We weigh this scenario with 60%.

Revenue Breakthrough

Share price: \$697

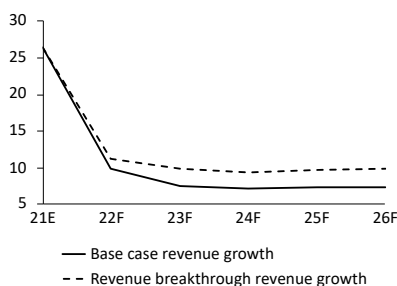
In the Revenue Breakthrough scenario, we expect Zebra to achieve higher revenue growth in the short to mid-term, driven by a superior vertical presence and a successful penetration in the software market. The new Omikron variant will continue to accelerate the digital transformation across all industries, making Zebra an even more important industry agnostic companion for its customers to optimize their workflows. Higher software growth might be driven by two factors: 1) Zebra further expands its cloud platform Zebra Savanna with MV capabilities and thus captures a higher software market share than assumed in the base case scenario. Likewise, recently acquired software portfolios such as Reflexis are gaining broader market acceptance than expected. 2) The already fast-growing software market is experiencing even greater growth due to increased demand for data analytics and MV solutions. We weight this scenario with 10%.

Closely Followed Competition

Share Price: \$626

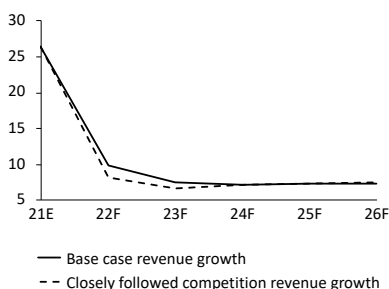
In the Closely Followed Competition scenario we assume Zebra to forfeit market shares due to a strengthened competitive landscape. In our opinion, competition may arise from three different directions: 1) Zebra's closest competitor Honeywell expands its geographical presence, closes the gap to Zebra in terms of patents and partner network size and leverages internal Group resources and know-how. 2) Datalogic successfully turnarounds its 2019 and 2020 revenue declines, manages to achieve the market leadership in the SIS and FRS segment and hence captures additional market share. 3) Toshiba TEC and Sato, as market leaders in the Japanese AIDC market, can increasingly apply their deep expertise gained in the retail and printing markets to the international and specifically Zebra's domestic U.S. market, thereby gaining more international customers and market shares. We weight this scenario with 20%.

Figure 71: Revenue growth Base Case scenario vs. Revenue Breakthrough scenario 2021E - 2026F, in %



Source: Analyst estimates

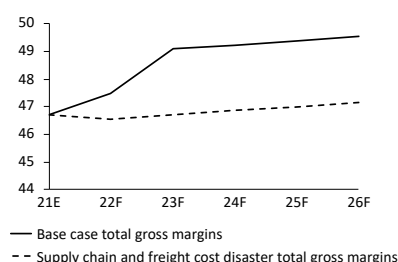
Figure 72: Revenue growth Base Case scenario vs. Closely Followed Competition scenario 2021E - 2026F, in %



Source: Analyst estimates

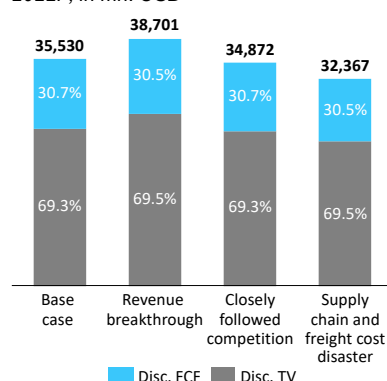
Sc.4: Ongoing supply chain issues & freight costs sustainably curb gross margin expansion // Scenario weighted share price target yields **HOLD** recommendation

Figure 73: Total gross margin Base Case scenario vs. Supply Chain and Freight Cost Disaster scenario 2021E - 2026F, in %



Source: Analyst estimates

Figure 74: Comparisson of enterprise values among all four scenarios Dec 2022F, in mn. USD



Source: Analyst estimates

Figure 75: Sensitivity analysis of Zebra's target share price Dec 2022F

		WACC					
		0.95	1.06	1.17	1.29	1.41	
		6.08%	6.63%	7.17%	7.75%	8.33%	
Growth Rate	-20%	1.81%	767.4	672.7	597.5	533.6	481.1
	-10%	2.03%	801.0	697.9	616.9	548.7	493.1
	0%	2.26%	838.7	725.8	638.1	565.1	506.0
	+10%	2.48%	881.1	756.6	661.4	582.8	519.9
	+20%	2.71%	929.2	791.0	687.0	602.2	534.9
			Buy	Hold	Sell		

Source: Analyst estimates

Supply Chain and Freight Costs Disaster

Share Price: \$579

In the Supply Chain and Freight Costs Disaster scenario, we predict supply chain issues and freight costs to worsen in the future. As a result, Zebra's future gross margins will remain at the lower bound level of 2021E due to the following two reasons: 1) Unlike in 2019 and 2020, when Zebra was able to pass on commodity price increases from its suppliers to its customers, a third price increase would be considered unenforceable. 2) The imbalance between supply and demand continues to impact supply chains, leading to persistently high freight costs in the future. Because hardware revenue accounts for 84% of total revenue in 2021E, supply chain concerns are expected to have a major impact on overall gross margin, resulting in decreased future free cash flows. We weight this scenario with 10%.

Considering the weighted free cash flows of the four scenarios and discounting them at Zebra's WACC of 7.17%, yields a weighted Enterprise Value of \$35,400m. After deducting \$1,190m net financial debt, and equity-settled compensation of \$369m, and adding net non-operating assets of \$117m, we reach a fair Equity Value of \$33,958m. Finally, dividing equity value by 53.42m total outstanding shares results in a 31st of December 2022 price target of \$635.70 per share, a total return of 8.97%. Anticipated share repurchases of \$113m by Dec 2022 account for 0.36% of total return. Consequently, we recommend investors to **HOLD** the stock of Zebra Technologies.

Sensitivity Analysis

We conducted a sensitivity analysis to examine the impact of changing assumptions on our price target and thus on our investment recommendation. Since the terminal value accounts on average for 69.5% of the EV across all four scenarios, the sensitivity analysis considers these factors that contribute to its determination. Hence, we decided to test our investment recommendation on variations in 1) the equity beta, affecting WACC, as well as 2) the long-term growth rate. Especially in the beta, we see uncertainties, wherefore we vary the beta between the lower bound level of the 95% confidence interval, corresponding to the increasing convergence towards the software beta, and the upper bound level, corresponding to the re-convergence towards the pre-pandemic beta level. The long-term growth rate is adjusted by 10% and 20% in both, upside and downside direction. As shown in Figure 75, our valuation is more sensitive to the beta, whereas it appears to be more robust to our long-term growth assumptions. Nevertheless, our **HOLD** recommendation seems to find the middle ground between an overly optimistic or overly pessimistic investment recommendation.

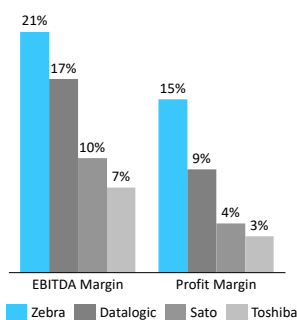
Multiple valuation deviates from DCF valuation, as market seems to value in ZBRA's market leading position

Table 9: Normalized P/E and EV/EBITDA multiples of Zebra and its competitors T12M

	P/E	EV/EBITDA
Zebra	40.3x	30.3x
Sato	15.0x	5.9x
Toshiba	18.0x	6.9x
Datalogic	17.1x	9.6x
Harmonic Mean	19.5x	8.9x

Source: Analyst estimates, Annual reports

Figure 76: Normalized EBITDA and profit margins of Zebra and its competitors T12M in %



Source: Analyst estimates, Annual reports

Multiples

To triangulate the results of the DCF analysis, we additionally determined Zebra's fair value using relative valuation. After assessing for geographical, operational (product mix, size) and financial similarity, we decided to further analyze Datalogic, Sato and Toshiba TEC. Honeywell as Zebra's main competitor does not report its financial results for its comparable Productivity Solutions segment on such granularity, wherefore it is neglected in the multiple analysis. To account for the fact, that P/E ratios are oftentimes affected by capital structure, we considered additionally the EV/EBITDA multiple. The competitor's one-off normalized T12M EV/EBITDA multiples vary from 5.9x to 9.6x, whereas the normalized T12M P/E ratios vary between 15.0x and 18.0x. Nevertheless, Zebra's EV/EBITDA and P/E ratio is estimated at 30.3x and 40.3x respectively, which is significantly higher than the weighted average of 8.9x and 19.5x. These multiples would imply a share price of \$152 for the EV/EBITDA and \$282 for the P/E multiple. The following reasons might explain the deviation of Zebra's current share price and the share price implied by our multiple valuation: 1) Although one might think that Zebra is potentially overvalued, we rather think the market prices in Zebra's market leading position (#1 in mobile computing/data capture/printing segments, highest EBITDA and profit margins (see Figure 76), largest partner network). 2) Also, one might reason that those selected competitors are not optimally comparable due to Zebra's broader market presence than Sato, Toshiba TEC and Datalogic (see *Geographical Presence* section). In conclusion, these factors may explain Zebra's notably higher EV/EBITDA and P/E ratios, resulting in valuation disparities.

Conclusion

As we have shown, Zebra is expected to be able to maintain its leadership position in the global AIDC market and managed to build excellent capabilities to successfully expand in adjacent markets such as MV, AIDC software, and mobile robots. Our scenario weighted target share price incorporates both, 1) the growth opportunities derived thereout, and 2) potential headwinds arising from intensified competition and a tense environment on global shipping and commodity markets. With our HOLD recommendation, based on a total return of 8.97% within the next 12 months, we confirm the market's pricing of the Zebra Technologies stock.

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Appendix

Financial Statements

In million USD	2019	2020	2021E	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F
Sales	4.485	4.448	5.625	6.181	6.644	7.122	7.646	8.213	8.624	9.055	9.508	9.984	10.483
Cost of goods sold	-2.385	-2.445	-2.997	-3.247	-3.381	-3.615	-3.870	-4.145	-4.336	-4.533	-4.736	-4.946	-5.162
Gross profit	2.100	2.003	2.628	2.935	3.263	3.507	3.776	4.068	4.288	4.523	4.772	5.037	5.321
Selling and marketing expenses	-503	-483	-579	-610	-627	-642	-689	-740	-777	-816	-857	-900	-945
Research and development expenses	-447	-453	-569	-631	-678	-726	-780	-838	-880	-924	-970	-1.018	-1.069
General and administrative expenses	-323	-304	-354	-363	-390	-418	-449	-482	-506	-532	-558	-586	-615
Acquisition and integration costs	-22	-23	-19	-8	0	0	0	0	0	0	0	0	0
Amortization of intangibles	-103	-78	-110	-116	-70	-70	-70	-70	-70	-27	0	0	0
Operating income	702	662	996	1.208	1.498	1.650	1.788	1.938	2.055	2.224	2.387	2.533	2.691
Core taxes	-85	-80	-160	-193	-239	-281	-309	-334	-357	-385	-414	-439	-466
Core result	617	582	837	1.015	1.258	1.369	1.478	1.604	1.698	1.838	1.973	2.094	2.225
Non-core income/(loss)	-15	-26	-9	-11	-12	-13	-14	-15	-15	-16	-17	-18	-19
Non-core taxes	12	8	2	2	2	2	2	2	2	2	2	2	3
Other comprehensive income	-9	-25	41	0	0	0	0	0	0	0	0	0	0
Non-core result	-12	-43	34	-9	-10	-11	-12	-13	-13	-14	-15	-16	-16
Interest expenses	-89	-76	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19
Tax shields	19	16	4	4	4	4	4	4	4	4	4	4	4
Financial result	-70	-60	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15
Total comprehensive income	535	479	856	991	1.233	1.343	1.451	1.575	1.669	1.809	1.942	2.063	2.194

In million USD	2019	2020	2021E	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F
Working cash	30	89	112	124	133	142	153	164	172	181	190	200	210
Accounts receivable	613	508	730	802	862	924	992	1.066	1.119	1.175	1.234	1.295	1.360
Inventory	474	511	396	581	700	748	801	858	897	938	980	1.024	1.068
Prepaid expenses and other current assets	46	70	82	79	85	91	98	105	110	116	121	127	134
Income tax receivable	32	16	36	44	47	51	54	58	61	64	67	71	74
Accounts payable	-552	-601	-641	-731	-761	-813	-871	-933	-976	-1.020	-1.066	-1.113	-1.161
Accrued liabilities	-345	-512	-596	-559	-600	-644	-691	-742	-779	-818	-859	-902	-947
Deferred revenue	-238	-308	-367	-351	-377	-404	-434	-466	-490	-514	-540	-567	-595
Income taxes payable	-38	-19	-12	-48	-52	-55	-60	-64	-67	-71	-74	-78	-82
Operating working capital, net	22	-246	-259	-59	37	39	42	46	49	52	55	58	61
Property, plant, and equipment	259	274	315	324	344	349	364	384	396	409	422	436	452
Right-of-use lease assets	107	135	152	168	180	193	207	223	234	245	258	271	285
Goodwill	2.622	2.988	3.282	3.282	3.282	3.282	3.282	3.282	3.282	3.282	3.282	3.282	3.282
Other intangible assets	275	402	494	378	308	237	167	97	27	0	0	0	0
Other long-term assets	81	87	64	101	109	116	125	134	141	148	155	163	171
Net operating deferred tax assets/ (liabilities)	134	127	138	149	157	165	174	184	191	197	205	213	221
Long-term deferred revenue	-221	-273	-351	-297	-319	-342	-367	-395	-414	-435	-457	-480	-504
Other long-term liabilities	-59	-68	-88	-91	-98	-105	-113	-121	-127	-133	-140	-147	-154
Other operating assets, net	3.198	3.672	4.005	4.013	3.961	3.895	3.839	3.789	3.729	3.713	3.724	3.738	3.753
Total operating invested capital	3.220	3.426	3.747	3.954	3.998	3.934	3.882	3.835	3.778	3.765	3.779	3.796	3.814
Equity investments	45	77	117	117	117	117	117	117	117	117	117	117	117
Net non-operating deferred tax assets/ (liabilities)	-7	12	0	0	0	0	0	0	0	0	0	0	0
Funds held available for M&A (pro forma)*	0	0	291	1.023	2.160	3.513	4.965	6.536	8.206	9.974	11.847	13.838	15.962
Total non-operating invested capital	38	89	408	1.140	2.277	3.630	5.082	6.653	8.323	10.090	11.964	13.955	16.079
Total funds invested	3.258	3.515	4.155	5.095	6.274	7.564	8.963	10.487	12.100	13.855	15.742	17.751	19.893
Excess cash	0	79	0	0	0	0	0	0	0	0	0	0	0
Interest rate derivatives	13	46	0	0	0	0	0	0	0	0	0	0	0
Financial debt	1.277	1.245	991	991	991	991	991	991	991	991	991	991	991
Lease liabilities	129	159	181	199	214	230	247	265	278	292	307	322	339
Net financial debt	1.419	1.371	1.172	1.190	1.205	1.221	1.238	1.256	1.269	1.284	1.298	1.313	1.330
Shareholders' equity	1.839	2.144	2.983	3.905	5.069	6.343	7.726	9.231	10.831	12.571	14.444	16.438	18.563
Total funds invested	3.258	3.515	4.155	5.095	6.274	7.564	8.963	10.487	12.100	13.855	15.742	17.751	19.893

In million USD	2019	2020	2021E	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F
NOPLAT	617	582	837	1.015	1.258	1.369	1.478	1.604	1.698	1.838	1.973	2.094	2.225
Depreciation and amortization	175	146	185	191	145	145	145	145	145	101	74	74	74
Gross free cash flow	792	728	1.021	1.205	1.403	1.514	1.623	1.748	1.842	1.940	2.047	2.168	2.300
Capital expenditure, net	-462	-682	-628	-99	-106	-93	-104	-110	-97	-99	-100	-102	-104
Changes in net working capital	-9	268	12	-200	-95	-3	-3	-3	-3	-3	-3	-3	-3
Changes in other operating assets and liabilities	-372	62	110	-99	14	14	15	16	13	13	14	14	15
Unlevered operating free cash flow	-51	376	516	807	1.215	1.433	1.531	1.650	1.755	1.851	1.958	2.077	2.207
Non-core result	-12	-43	34	-9	-10	-11	-12	-13	-13	-14	-15	-16	-16
Changes in non-operating assets	331	-51	-319	-732	-1.136	-1.353	-1.452	-1.571	-1.670	-1.768	-1.873	-1.992	-2.124
<i>Of which increase in funds held available for M&A *</i>	<i>0</i>	<i>0</i>	<i>-291</i>	<i>-732</i>	<i>-1.136</i>	<i>-1.353</i>	<i>-1.452</i>	<i>-1.571</i>	<i>-1.670</i>	<i>-1.768</i>	<i>-1.873</i>	<i>-1.992</i>	<i>-2.124</i>
Non-operating free cash flow	319	-94	-285	-741	-1.146	-1.364	-1.464	-1.584	-1.683	-1.782	-1.888	-2.008	-2.140
Interest expenses	-89	-76	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19
Tax shield	19	16	4	4	4	4	4	4	4	4	4	4	4
Changes in financial debt incl. interest rate derivative	-167	31	-278	18	15	15	17	18	13	14	15	15	17
Changes in excess cash	0	-79	79	0	0	0	0	0	0	0	0	0	0
Transactions with shareholders	-31	-174	-17	-69	-69	-69	-69	-69	-69	-69	-69	-69	-69
Total financing cash flow	-268	-282	-230	-66	-69	-69	-67	-66	-71	-70	-70	-69	-68

* Zebra has a zero dividend payout policy and solely distributes cash to shareholders through the existing share repurchase program, which has no definitive duration. Therefore, we actually do not expect these funds will be distributed via dividends, which would increase the *Transactions with shareholders* respectively. Against the background of Zebra's M&A heritage, we rather expect the funds to be invested in future acquisitions. Both scenarios, dividend distribution to investors and M&A investments would result in the cash not being kept in the company - at least not in the form of cash or cash equivalents/excess cash. Therefore, we did not allocate the funds to *Excess Cash* but created the pro-forma account *Funds held available for M&A*.

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Buy	Expected total return (including expected capital gains and expected dividend yield) of more than 10% over a 12-month period.
Hold	Expected total return (including expected capital gains and expected dividend yield) between 0% and 10% over a 12-month period.
Sell	Expected negative total return (including expected capital gains and expected dividend yield) over a 12-month period.

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