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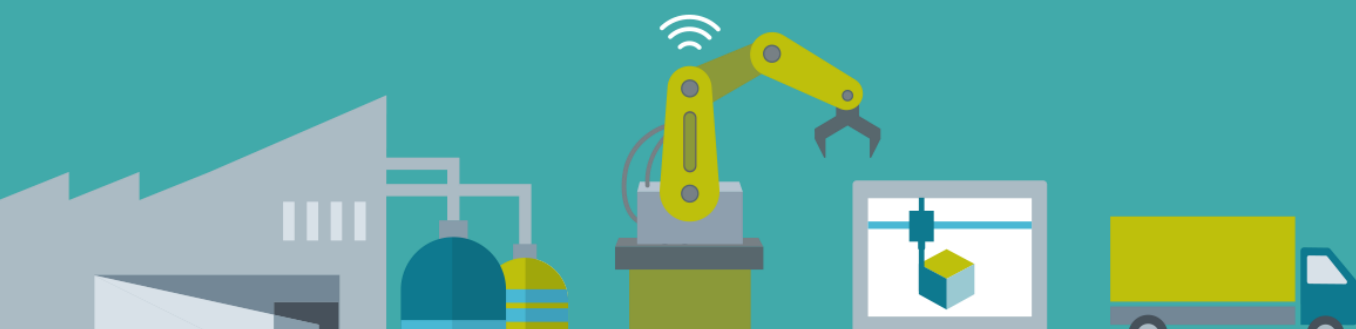
The Finance Factor

The role of integrated finance in enabling digital transformation for manufacturers and technology providers

Siemens Financial Services, February 2019

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Management summary

- Digital transformation – the journey to Industry 4.0 is widely recognized as an imperative for manufacturers across the world. Seven in every ten manufacturers are now implementing or planning their Industry 4.0 transformation.
- However, digital transformation requires widespread investment in technology, whether replacements or retrofit, and this investment burden is presenting manufacturers with a major financial challenge.
- To ease the process of investing in Industry 4.0 – at home or abroad, a range of specialist financing tools – often termed Finance 4.0 – is emerging, to help acquire digital technologies without having to raise large amounts of capital.
- Smart equipment manufacturers (OEMs) are offering financing options as an integrated part of their value proposition as it gives them a competitive advantage over their rivals.
- Research by (SFS) among international OEMs reveals that these technology companies expect to boost their sales by 25%-35% over the next five years by offering such integrated financing options.

The imperative for digital transformation

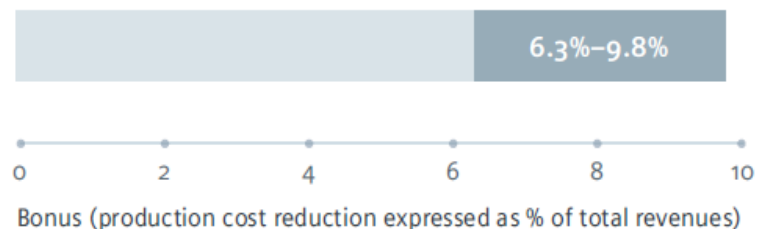
The journey to Industry 4.0 is now well recognized as an imperative for manufacturers across the globe seeking to remain competitive in their industries. According to one recent research exercise, every fourth machine in manufacturing industry is now 'smart'ⁱ. In addition, 71% of manufacturers are implementing or planning their Industry 4.0 transformationⁱⁱ.

Industry 4.0 enables fundamental optimization in manufacturing processes - production, engineering, raw materials purchasing and usage, supply chain and product life cycle management, predictive maintenance, predictive quality and remote site management. In the pioneering smart factories that have already been established equipment and products are uniquely identifiable, locatable, and have embedded intelligence that tracks and holds history, status and quality. Processes have become self-adjusting and re-calibrating. Embedded sensor data is linked to business processes and people throughout the factory and the enterprise, as well as upstream to suppliers and downstream to customers to deliver levels of service, agility, transparency, flexibility and efficiency not seen before. The entire manufacturing value chain is being re-engineered.

These smart factories make 'mass customization' possible - allowing individual customer requirements to be met, even down to profitable manufacturing of one-off items. Additive manufacturing – or 3D printing – is making a major contribution to such 'unit-of-one' manufacturing. Dynamic business and engineering processes make rapid, automated set-up and last-minute changes in the production cycle without disrupting productivity KPIs. The end-to-end transparency that Industry 4.0 offers over manufacturing processes really optimizes decision-making. In fact, whole new business models and manufacturing capabilities are being made possible by Industry 4.0 – for instance new ways of making specialty chemical products from hazardous raw materials, all enabled by automated sensing and management to the micro-level of the production process.

Perhaps most importantly, Industry 4.0 is making it possible for SMEs and mid-tier manufacturers to compete in global markets, even with very large rivals. Therefore suppliers of Industry 4.0 enabled technology want to make it easy and straightforward for their manufacturing customers to invest in their equipment and offerings.

Global Digitalization Productivity Bonus: reduced production costs resulting from conversion to digitalized technology Figure 2



The Digitalization Productivity Bonus is a model based on global research in 2017 by Siemens Financial Services. This research consulted over 60 international industrial companies, expert management consultancies and academic specialists based in 11 countries around the globe. Respondents estimated the reduction in production costs resulting from conversion to industry 4.0 expressed as a proportion of total revenue.

The size of the opportunity for OEMs

The available market for equipment manufacturers (OEMs) is considerable. The global Industry 4.0 technology market is predicted to reach \$214bn by 2023ⁱⁱⁱ, up from \$66bn in 2016^{iv}, and expected to reach \$1 trillion by the early 2030s^v. Yet this only covers Industry 4.0 specific sales and does not embrace the much larger market for retrofit and new digitized versions of key production technologies. Clearly, manufacturing industry across the globe is facing a major investment challenge and stands in need of methods of acquiring their new generation technology that are affordable and commercially sustainable. Therefore, OEMs are under pressure not simply to offer high performance digitalized technology, but also provide a value proposition to their clients – at home and abroad - that makes it easy and commercially sustainable for them to migrate their equipment and systems to the Industry 4.0 environment.

World machine tool statistics 2017: Production volume of the top-10-countries.

	Production in million Euro		Production in % of the total market	
	2013	2017	2013	2017
China	14,906	17,880	24.4 %	25.1 %
Germany	11,145	11,840	18.2 %	16.6 %
Japan	9,065	11,391	14.8 %	16.0 %
Italy	3,997	5,491	6.5 %	7.7 %
USA	4,376	4,851	7.2 %	6.8 %
South Korea	3,879	4,296	6.3 %	6.0 %

Finance – enabling Industry 4.0 investment

Ongoing research^{vi} has identified a range of specialist financing methods that are being deployed by manufacturing CFOs to upgrade to the digitalized, automated operating platforms of Industry 4.0. The specialized range of financing techniques – often referred to as *Finance 4.0* - covers the gamut of requirements, from the acquisition of a single digitalized piece of equipment, to financing a whole new factory, to even acquiring a competitor. It is important to note that the increasing role of software in today's smart factory is also embraced within such financing techniques – not just for software enabled equipment, but including stand-alone software and 'digital twin' applications (such as Siemens' Product Lifecycle Management software).

Finance 4.0 arrangements tend to be offered by specialist providers that have a deep understanding not only of how the digitalized technology works, but also how that technology can be practically implemented to deliver the efficiency, productivity and competitive benefits of digitalization. At best, the financing arrangement will be an embedded part of the value proposition, offered right at the beginning of the sales cycle. At other times, the technology provider will refer its customer to one or more finance providers to fund a sale. Complete solutions should be taken into consideration in order to identify the best financial package to effectively digitalize a manufacturing facility's entire operation - from equipment to software to production line to the full enterprise.

So, how important is finance in the whole value proposition? How much influence does embedded financing have – firstly on the ability of manufacturers to invest in Industry 4.0 – and secondly on the ability of OEMs to sell their digitally-enabled solutions?

To answer this question, Siemens Financial Services recently conducted research^{vii} amongst global manufacturing technology OEMs to find out how offering integrated financing options in their value proposition is expected to boost their ability to help their clients acquire a new generation of digitalized technology over the next five years.

The research interviewees confirmed that they are either experiencing, or expect to experience, a 25-35% uplift in sales over the period as a result of offering integrated financing which makes the technology investment affordable and commercially sustainable for their clients.

Integrated financing allows manufacturers to align technology costs closely with the efficiency, productivity and competitive benefits that the technology brings. Monthly fees are offset by the monthly business benefit of the digitalized technology acquired – without having to invest substantial amounts of capital up-front. Moreover, having finance as an embedded part of their solution allows OEMs to capture more sales as the process is simple and easy to conclude – one transaction, one party, one process.

Specialist financing for Industry 4.0 technology, machinery and equipment investment is composed of a number of key components and techniques, each of which is briefly described in the following section of this paper.

OEMs predict that they will gain a 25%-35% sales uplift over the next five years by offering integrated finance.

Industry 4.0 financing tools

OEMs can access a range of Industry 4.0 Finance techniques which help their client organizations, large and small, to access the **Digitalization Productivity Bonus**. The following sections briefly explain how each works and what they enable.

Pay to Access/Use Equipment & Technology Finance

At present, most manufacturers are looking for financial tools to help them acquire a piece of equipment or a system from OEMs without the need to use up their own capital – whether accrued profits or bank loans. This will usually be some form of finance lease, operating lease, rental or hire purchase arrangement. Financiers with a deep knowledge of manufacturing will flex the finance period and terms to align with the likely benefits the manufacturer will gain from the technology. Often this type of financing will cover associated costs of ownership, such as maintenance, into a ‘bundled’ monthly payment. To enable rapid purchasing decisions, a financier will often have a ‘master’ agreement with a manufacturer. This is an umbrella arrangement making new equipment leases fast and giving the manufacturer the confidence that they will be able to acquire new equipment from an OEM as soon as they need it.

Technology Upgrade and Update

Industry 4.0 developments are happening fast. Since technology innovation and upgrade periods are shortening in a digitalized world^{viii}, OEMs can also offer integrated equipment and technology finance options to upgrade during the financing period, offering protection against technological obsolescence. Upgrades might involve replacing with a newer model, or retro-fitting enhancements onto the main technology platform.

Software Finance

Digital transformation necessarily means deploying combined hardware and software solutions which can deliver digital data streams of performance data that are the key to production optimization, predictive and remote maintenance, and more intelligent manufacturing. This is recognized by specialist financiers who can offer OEMs integrated arrangements for financing such hybrid requirements. Knowledge of how the software is implemented and the business outcomes it is likely to produce allows these financiers to understand the associated risk and embrace the software element into a total financing package.

Pay for Outcomes

Although only in its infancy, financing agreements are emerging where payments are predicated on the expected business benefits, or ‘outcomes’, that the technology makes possible^{ix}. Savings or gains from access to the technology are used to fund monthly payments, making the technology cost-neutral for the manufacturer. A good example is where energy-efficient equipment delivers cost savings from lower energy consumption, and a financing plan aligns payments to the rate of savings made each month. In some cases, this means that OEMs can offer technology solutions a low- or zero-net-cost, because the energy savings pay for the technology upgrade over the life of the financing plan.

Transition Finance

While the benefits of moving to a digitalized manufacturing environment are clear, the process of transition has to be carefully managed and commercial risk eliminated by rigorously testing new technology in the real-world production environment. For OEMs, this can often act as a barrier to digital transformation among their clients, because the manufacturer is put off by the idea of having to pay for both old and new system during the transition period. Recognizing the challenges of transition, financing arrangements are available that defer payment for a new system until it is reliably

up and running, removing the financial challenge of having to pay for the new system while the old one is still running.

Working Capital Solutions

OEMs are also starting to do more to help their manufacturing customers than simply enable technology acquisition. This can form an important enhancement to customer relationships, improving satisfaction and therefore customer retention/repeat business. After all, cash flow and working capital challenges do not only arise at the point of acquiring digitalized technology. Digitalization may increase production capacity and productivity, while improving price competitiveness, to the extent that a manufacturer's order book experiences a sudden and/or significant upswing. This is good news. Yet it brings its own challenges – such as suddenly having to buy in greater quantities of raw materials or component parts. Added-value financing services offered in partnership with a specialist financier – usually based on some form of invoice finance - are available to help manage the cash flow challenges that success through digitalization brings.

Asset-based Lending

With digitalization, manufacturers may experience tightened liquidity due to rapid growth. Again, in partnership with a specialist financing partner, OEMs can extend their value to customers to ease these working capital pressures, help their customers to grow, and thereby foster future technology requirements. Asset based lending allows a borrower to access the cash that may be tied up in working capital assets. A revolving line of credit, secured by the borrower's accounts receivable and inventory, provides the liquidity needed to meet daily cash needs. The manufacturer could use the cash to help fund ongoing operations, growth, acquisitions or restructuring as a result of digitalized upgrades.

Acquisition/Growth Financing

Manufacturers who invest in digitalization will reap the benefits, taking market share from those who do not. Growth by acquisition will, on occasion, make good business sense for these digital winners, whether to acquire ailing competitors, or make strategic moves into new geographies and markets. In these situations, financiers are offering tailored corporate loan facilities and revolving credit - to be used for daily corporate use and for strategic growth. Sometimes these manifest as multi-lender syndicated facility.

Refinancing/Recapitalization

A manufacturer may need to manage debt or may experience a change in financial ownership. Financiers offer term loans and revolving credit facilities, so manufacturers can adjust their capital structures in order to improve debt, make distributions to shareholders, and facilitate ownership changes lowering the overall cost of capital. With digitalization, manufacturers could easily grow out of their legacy capital structures, and may need to refinance debt at more competitive rates.

i Bitkom, Industrie 4.0: Jede vierte Maschine ist smart, 23 Apr 2018
ii ibid
iii Research & Markets, Global Industry 4.0 Market & Technologies 2018-2023
iv Markets and Markets, Industry 4.0 through 2022
v Research & Markets, Global Industry 4.0 Market & Technologies 2018-2023
vi Over 150 interviews with manufacturing CFOs conducted by telephone between July 2015 and February 2017
vii 31 international OEMs of digitally enabled manufacturing technology - from the USA, Europe, UK and China – were interviewed during August and September 2018. Interviewees were asked how much embedded financing solutions were boosting – or were expected to boost – equipment sales over the next five years.
viii According to Siemens Financial Services research, published in Investing in Success (2016), 67% of manufacturing respondents observed that technology replacement/upgrade cycles are shortening
ix This whole subject is discussed in a Siemens Financial Services research paper, Opportunities and Outcomes, February 2017

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