Mphasis
The Next Applied

Stop Chasing the ROI! Focus on ROIC

Evaluating the potential impact of your AI-based automation PoC for going live

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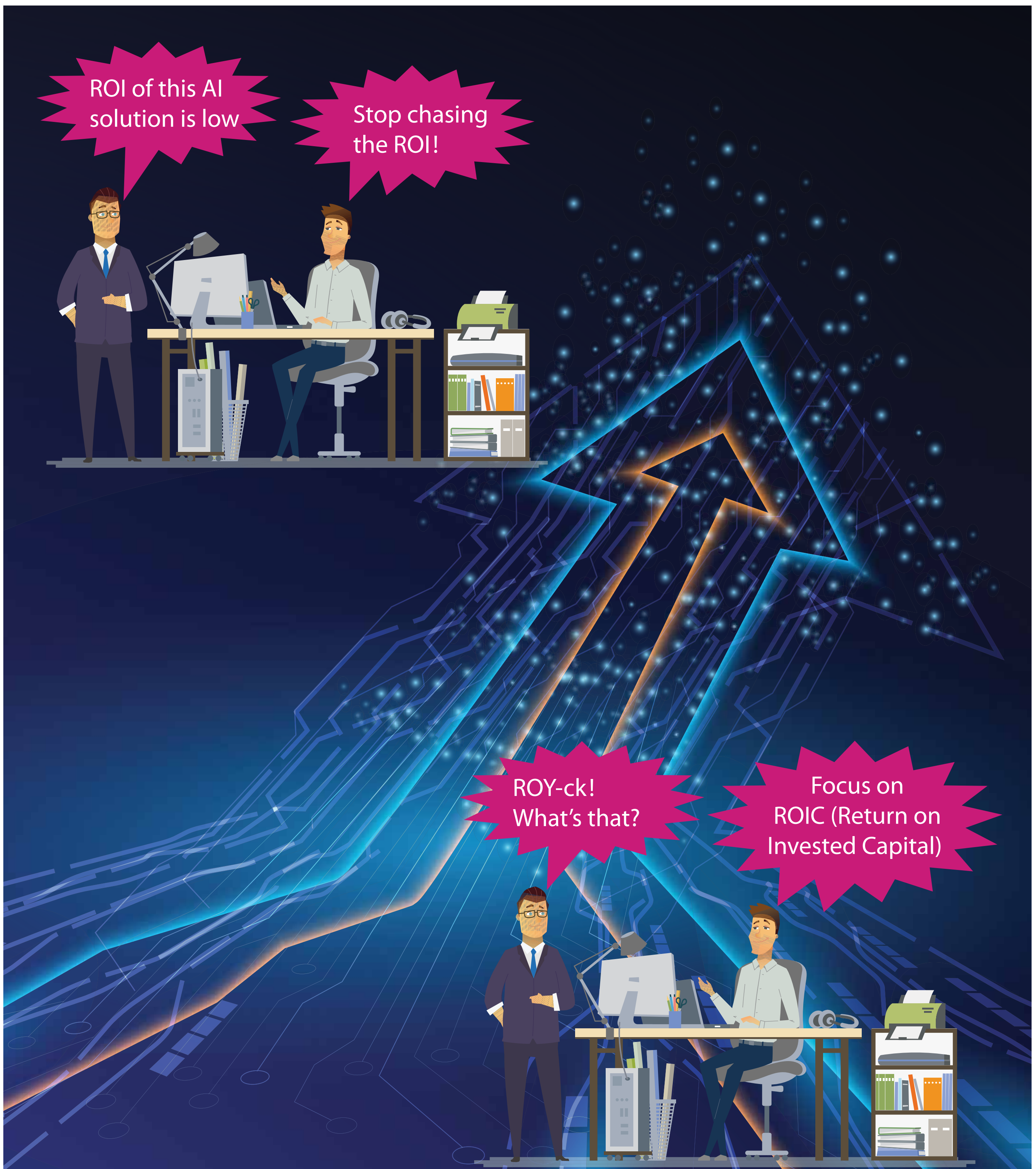


Contents

Setting the business context 1

What is ROIC? Why should we care? 1

What is invested capital in the context of AI? 3

What is the nature of AI projects? Why does ROIC suit AI? 3

What do the top industry leaders say? 4

Back to our business context 7

1.
Setting the business context

Meeting at a major financial services firm among VP of Technology, Sales Lead and Cognitive Solutions Manager of AI service provider.
The meeting conclusion…

1

"Folks, I really do not see any benefit of going ahead with this AI PoC. You guys have done a successful PoC, which is a good thing. But, I do not see any significant ROI if this is put into production. The potential for productivity improvement is only 5 percent. I do not wish to be the executive sponsor for this engagement."

VP of Technology
at the financial services firm

2

"I suggest an alternate way of framing this issue. By investing in AI, are you investing in a new technology or capability? How do we know if this AI investment is not going to increase the value of your firm?"

Cognitive Solutions Manager
of the AI service provider

3

What's this thing called value? What are you talking about? Doesn't ROI measure value?

VP of Technology

4

"Unfortunately, NO! Value is not captured by ROI. Value means this -what is the return your firm can generate on every dollar invested? Let me explain to you, how this works in the context of our AI PoC."

Cognitive Solutions Manager

2.
What is ROIC? Why should we care?

ROI only looks at the return on investment of a specific technology. A better metric is ROIC[1] (Return on Invested Capital) that looks at the organization-wide metric on how profitability of the organization is impacted by investing in a specific technology. ROIC tells us how good a company is at turning capital into profits. In essence, ROIC is a profitability ratio and measures the efficiency of capital deployed. Those who have money invested in the enterprise want to see a return on their money – that is, a return more than what they would have earned if they had invested their money differently.

[1] *Cachon, G., & Terwiesch, C. (2008). Matching Supply with Demand. McGraw-Hill Publishing.*

A 2018 article in Forbes noted that though CXOs seldom spoke about ROIC, the tide is turning in recent years[2]. CXOs have begun to care about ROIC because this metric is a key driver of shareholder value. The ability of a company to earn a return on capital greater than its cost of capital is the primary driver of creating value. In the 1990's, management consulting firms rose to prominence by pitching ROIC-based process improvement recommendations[3].

ROIC has been considered a reliable measure of long-term performance by reflexive management practitioners[4]. However, during the quarterly earnings presentations, this metric seldom figures in the list. Quarterly reviews focus on *absolute* metrics (short-term profits/ROI) and not on the *relative* metrics (ROIC). Focus on ROIC does not increase profits in the short-term. But, it tends to increase profits in the long-term[5]. Short-term profit figures are vulnerable to financial engineering that may obscure the business fundamentals. Long-term figures like ROIC, however, capture business fundamentals in a holistic manner and are less vulnerable to short-term gaming[6].

The idea of Value has its origins in the 1985 Nobel Prize winning work by economists Franco Modigliani and Merton Miller[7]. Their study identified ROIC as a major driver to create value to the firm.

$$\textit{Value created} = \textit{Invested Capital} * (\textit{ROIC} - \textit{Cost of Capital})$$

Creating Value is equivalent to increasing ROIC (so that it is more than the cost of capital).
Short-term profits may or may not increase by pursuing an efficient use of capital.
But in the long-term, there is a high tendency to realize profits.

$$ROIC = \frac{Profits}{(Invested\ Capital)}$$

$$ROIC = \frac{Profits}{Revenue} \times \frac{Revenue}{(Invested\ Capital)}$$

$$ROIC = Margin \times Asset\ Turns$$

This decomposition formula for ROIC was invented by Frank Donaldson Brown at Du Pont Company during the early 20th century.

[2] https://www.forbes.com/sites/greatspeculations/2018/09/12/ceos-that-focus-on-roic-outperform/#563ecf10567b

[3] https://www.newconstructs.com/wp-content/uploads/2016/01/MetricWars.pdf

[4] https://www.forbes.com/sites/stevedenning/2014/05/23/clayton-christensen-are-investors-bad-for-business/#6bdd01b945a9

[5] https://www.forbes.com/sites/stevedenning/2014/05/23/clayton-christensen-are-investors-bad-for-business/#6bdd01b945a9

[6] https://www2.deloitte.com/insights/us/en/topics/operations/success-or-struggle-roa-as-a-true-measure-of-business-performance.html

[7] https://www.nobelprize.org/prizes/economic-sciences/1985/press-release/

A Harvard Business Review article published in 2015 quantified the impact of ROIC on Value[8]: *“Unless your company’s return on capital exceeds its cost of capital, no amount of revenue growth can create value. For the many firms whose cost of capital and return on capital are roughly equal, in fact, the only path to value creation is to increase return on capital. The results can be impressive: if your firm’s return on invested capital is 8% and you have an 8% cost of capital, a 1% improvement in ROIC will increase firm value by 19%.”*

3.
What is invested capital in the context of AI?

- Human Resources for developing algorithms and data engineering (data engineers, ML engineers/researchers, data scientists, AI strategists, etc.)
- Cloud computing resources (like Amazon Web Services, Google Cloud Platform, Microsoft Azure, etc.)
- Hardware needed to run AI algorithms (if deployment is done on-premise, like GPUs for deep learning)

ROIC is increased if the AI investment increases margin or helps to turn assets faster.

4.
What is the nature of AI projects? Why does ROIC suit AI?

The nature of AI projects differs from conventional enterprise IT projects[9] in the following manner:

- Innovations based on AI are very different from other IT-based innovations. Instead of a technology deployment, AI-based innovations focus on exploration and exploitation of information (data).
- Typical technology deployments view information as a resource that resides in databases. AI-based innovation (like Watson, DeepInsights™, Nia™, Holmes, Ignio™, etc.) views information as an asset to stakeholders within the organization. Therefore, an AI-based innovation cannot be treated like a conventional, large IT-based innovation, with well-defined outcomes, tasks, and detailed plans. AI-based innovations would be smaller, shorter initiatives commissioned o address a problem or opportunity that someone has sensed.

[8] *Marco-Izquierdo, J. (2015). CEOs don’t care enough about capital allocation. Harvard Business Review.*

[9] *Marchand, D. A., & Peppard, J. (2013). Why IT fumbles analytics. Harvard Business Review, 91(1), 104-112.*

- A typical AI project frames questions and explores appropriate data that might provide best answers, develops hypotheses, and iteratively experiments with them to gain knowledge and understanding.
- Uncertainty in outputs is inherent in AI. This is not the case with typical IT-based projects. For example, an enterprise solution for order-to-cash processing works in deterministic manner. But an AI solution that predicts order size or does processing mining of order-to-cash process would give very different and unexpected outputs based on the changing nature of underlying data. AI solutions are probabilistic and not deterministic.
- An AI solution that is developed for intelligently extracting data from invoices cannot be fine-tuned for extracting data from legal contract documents. Rather, the AI solution developed for intelligently extracting data from invoices signals the capability of developing such a solution. For example, let's take the case of IBM Watson built for Jeopardy! Dave Ferrucci, who led the development of Watson during 2007-2011, said[10]:

  "There is an underlying hypothesis – that if you can solve the Jeopardy! Problem, you have produced a more general capability than has ever been produced in the field of machine-based question answering. Does that mean you take it out of the box and apply it to some other field? No, it means that you can build such a capability with less effort and skill than ever required before, that ultimately there is an efficient process that is worth the time and effort in return."

Thus, a typical AI-based project's focus is long-term capability building innovation. As such, metrics of short-term performance are poor at judging the merits of AI-based innovation.

5.
What do the top industry leaders say?

Uniper CIO, Damian Bunyan, on the approach to funding digital solutions, as part of their digitalization strategy[11]:

"I don't have enough money to do all of the IT projects I'd like to do. Still, I'm quite reluctant to associate digitalization with cost savings, because it stops people from engaging with me. I'd much rather link digitalization to effectiveness. For example, if you're in accounts payable, I'd say, 'Through digitization, I can help you pay a higher percentage of invoices on time and also spot the invoices that are incorrect.' This way, I have a powerful use case that engages people."

[10] *Shih, Willy. "Building Watson: Not So Elementary, My Dear!" Harvard Business School Case 612-017, September 2011. (Revised July 2012.)*

[11] *https://www.dxc.technology/digital_transformation/insights/145898-uniper_cio_damian_bunyan_on_digital_strategy*

JP Morgan CEO, Jamie Dimon, on investing for the future[12]:

"Do not confuse financial success with profits in a quarter or even in a year. All businesses have a different customer and investment life-cycle, which can be anywhere from one year to 30 years – think of building new restaurants to developing new airplanes or building electrical grids. Generally, anything our business does to grow will cost money in the short-term (whether it's opening branches or conducting research and development (R&D) or launching products), but it does not mean that it is not the right financial decision. A company could be losing money on its way to bankruptcy or on its way to a very high return on invested capital. Diligent management teams understand the difference between the two scenarios and invest in a way that will make the company financially successful over time.

You need to invest continually for better products and services, so you can serve your customers in the future. A bank cannot simply stop serving its clients or halt investing because of quarterly or annual earnings pressures.

It does not work when long-term investing is changed because of short-term pressures – you cannot stop/start training programs and the development of new products, among other investments. You need to serve your clients and make investments while explaining to shareholders why certain decisions are appropriate at that time. Earnings results for any one quarter or even the next few years are fundamentally the result of decisions that were made years and even decades earlier."

Maersk CEO, Soren Skou, on digital transformation and evaluation metrics[13]:

"2018 was a year where we made significant progress on the journey to become a completely different company […] We have confound our digitization journey to the point that in Ocean, the customers' transactions with us are now largely digitized […] we are introducing the new metric, cash return on invested capital, to really demonstrate that we are moving forward with a very, very strong capital discipline and with the aim of generating real cash returns."

A 2019 New York Times article interviewed Reid Hoffman (author of Blitzscaling: The Lightning-Fast Path to Building Massively Valuable Companies)[14]:

"Reid Hoffman, the co-founder of LinkedIn and a partner at Greylock Partners, said at The New York Times' New Work Summit in California that he looked very carefully at AI ventures to see how they were making new, interesting things possible and how he could bet on them early. He said current machine learning techniques, which are transforming fundamental industries, gave an amazing glimpse of the future. 'My ideal investing is stuff that looks a little crazy now and in three years is obvious or five years is obvious,' Mr. Hoffman said."

[12] *https://reports.jpmorganchase.com/investor-relations/2017/ar-ceo-letters.htm?1*

[13] *https://seekingalpha.com/article/4243143-p-moeller-maersk-sa-amkaf-ceo-soren-skou-q4-2018-results-earnings-call-transcript*

[14] *https://www.nytimes.com/2019/03/02/business/reid-hoffman-ai-investments.html*

Arjun Sethi, Partner at A.T. Kearney where he serves as Vice Chair of the Digital Transformation Practice says the need for boards to have an AI Council[15]:

"The AI council is an advisory council with a board-level mandate to ensure that company strategy actively anticipates and keeps pace with AI advances […] The AI council maintains a holistic and forward-looking view of AI, encompassing long-term as well as near-term considerations. Its overarching goal is to ensure that shareholders, customers, employees, and society overall benefit as fully as possible from the company's expanding embrace of AI. […] The AI council initiates and (with top leadership) shapes strategy for accessing and applying AI to create competitive advantage. This includes identifying the best mechanisms toward that end — i.e., capital investment, M&A, joint ventures, and strategic partnerships. […] The effectiveness of the AI council should be gauged, above all, by its contributions to safeguarding and building shareholder value."

Carliss Baldwin, Professor at Harvard Business School, has been studying for over two decades on how firms create and capture value through technological innovations[16]:

"…for businesses engaged in Schumpeterian competition[17], innovators with an ROIC advantage can drive out their predecessors by making them unprofitable. In this fashion, relative ROIC determines an innovation's potential for 'creative destruction'. […] The ROIC measure lies at the very heart of the process of creative destruction. In the first place, for products and markets where there is no pre-existing competition, ROIC will be used by financiers to determine whether the new product or market is worth funding. In expectation, the profits from the new venture divided by the capital needed to create it must exceed the opportunity cost of capital. Completely new products or markets are relatively rare, however. In the more common case, new entrants compete against incumbents in an existing market. In such cases, the firm with the highest ROIC is most likely to succeed. […] An ROIC advantage is thus the acid test of an innovation's potential for 'creative destruction'."

What do these points of view convey? They show a careful focus on the long-term by balancing the short-term – that is, making decisions with the next five years in mind rather than just the immediate quarter. When executive sponsors and CXOs typically focus on short-term metrics, they blame the shareholders and boards for putting pressure on them. A recent McKinsey study found that 75 percent of all equity is held by long-term investors like institutional funds and university endowments[18]. The approach one can follow is to connect with long-term investors and explain long-term vision (building AI capability)[18]. This will help one to defend when short-term investors begin pressurizing for quarterly results. The key ability of decision-makers (executive sponsors and CXOs) is to get through the quarter well, articulate the long-term vision and get the buy in from shareholders and boards. The ROIC metric is particularly suited to achieve this fine balance.

[15] https://venturebeat.com/2019/04/28/why-your-board-needs-an-ai-council/

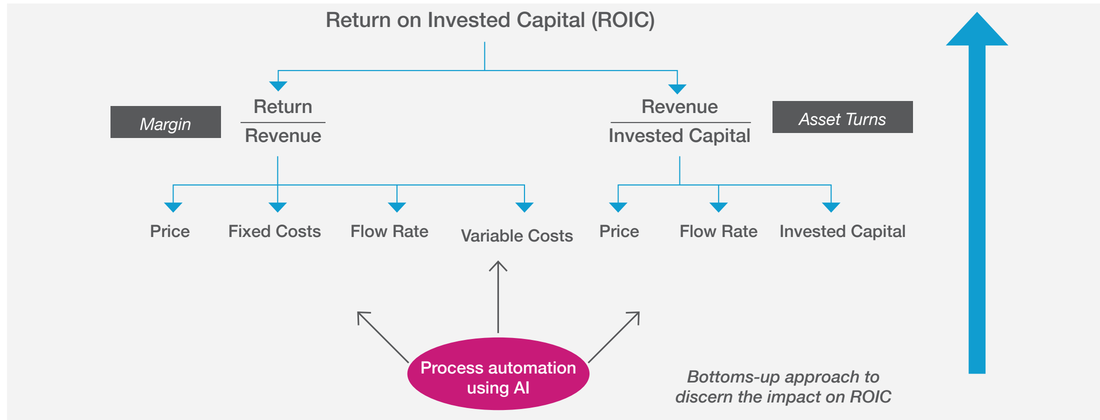
[16] Baldwin, Carliss Y. (2017) "Return on Invested Capital (ROIC)." In The Palgrave Encyclopedia of Strategic Management. edited by Mie Augier and David J. Teece. Palgrave Macmillan

[17] Competition in a market characterized by very high rates of radical technological innovation (creative destruction) where old established incumbent firms are displaced by entrants- Introduced by the economist, Joseph Schumpeter.

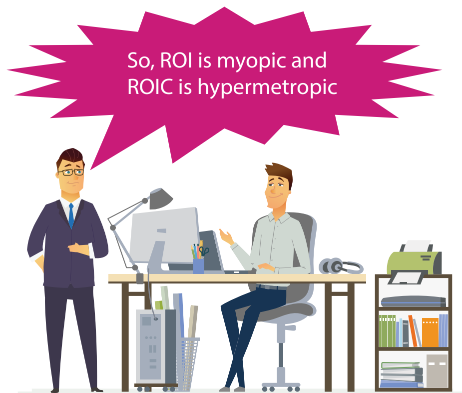
[18] Dennis Carey et al. (2018). Go Long: Why Long-Term Thinking is Your Best Short-Term Strategy. Wharton Digital Press

6.
Back to our business context

What would happen, if the VP of Technology was looking at the business scenario from the perspective of potential impact on ROIC?



He would probably say the following: "Hmmm…now, I see where you are coming from. As an executive sponsor for this AI project, my mandate is to invest in projects that involves innovative long-term capability building. This AI solution is an innovation-based project and helps the firm to build long-term Value. So, let me compute the ROIC and see if I can invest. If this is greater than the cost of capital, I will proceed with the investment in AI solution by convincing my boss and the shareholders. Thanks mate, for clarifying this!"



About Mphasis

Mphasis (BSE: 526299; NSE: MPHASIS) applies next-generation technology to help enterprises transform businesses globally. Customer centricity is foundational to Mphasis and is reflected in the Mphasis' Front2Back™ Transformation approach. Front2Back™ uses the exponential power of cloud and cognitive to provide hyper-personalized ($C = X2C^2_{TM} = 1$) digital experience to clients and their end customers. Mphasis' Service Transformation approach helps 'shrink the core' through the application of digital technologies across legacy environments within an enterprise, enabling businesses to stay ahead in a changing world. Mphasis' core reference architectures and tools, speed and innovation with domain expertise and specialization are key to building strong relationships with marquee clients. To know more, please visit www.mphasis.com

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