

Managing a service business

An analysis using systems thinking

The Silver Bullet Machine Manufacturing Company Limited

The full content of this document is the copyright of The Silver Bullet Machine Manufacturing Company Limited.

None of the material may be duplicated or copied, in whole or in part, in any format, electronic or otherwise, without the written consent of the copyright owner.

© The Silver Bullet Machine Manufacturing Company Limited 2015

These slides comprise a series of ‘causal loop diagrams’ : representations of chains of cause-and-effect relationships which underpin some of the key features of a service business, such as one based on a call centre. As you will see, a key service driver is the ‘delivery time’ , which the organisation seeks to minimise, so as to comply with an increasingly stringent customer promise. The revenue stream is generated primarily by the size of the customer base, and this also drives the demand on the service.

The intention of these diagrams is to capture the essence of how the business operates as a unified whole, how the various parts interact with one another, and how some key external influences impact on what happens.

In that these diagrams represent a generalised service business as it is, they should contain no surprises. But that doesn’ t stop them from being extremely powerful - what other ways are there of representing the business as a whole, rather than as an aggregate of separate bits?

These diagrams are representative of a technique known as ‘systems thinking’ , which encourages a holistic approach to addressing and solving complex problems, and can be used as a basis for computer simulation modelling of how we can best grow a business.

Although all businesses are complex, this complexity can be tamed. So these diagrams are not trivial, and require some concentration. But they are not incomprehensible. Indeed, you may judge whether or not they truly ‘see the wood for the trees’ .

Systems thinking and system dynamics - the benefits

- **Systems thinking can help you tame the complexity of real world problems** by providing a structured way of balancing a broad, complete view with the selection of the right level of detail, truly **allowing you to 'see the wood for the trees'**.
- **Causal loop diagrams** - a visual method of capturing this now-tamed complexity - **are a powerful means of communication**, and their use can ensure that as wide a community as you wish have a genuinely, and deeply, shared view. **This is enormously valuable in building high-performing teams.**
- **Causal loop diagrams can also help you identify the wisest way of influencing the system of interest.** As a result, you can avoid taking poor decisions - for example, decisions that look like quick-fixes, but are likely to backfire.
- **System dynamics modelling** is a computer modelling technique that allows you to simulate how a complex system, as expressed as a causal loop diagram, is likely to evolve over time. **This provides you with a 'laboratory of the future', so that you can test the likely consequences of actions, decisions or policies before you are obliged to commit.**
- **Overall, systems thinking can help you take decisions that pass the most stringent test there is - the test of time.**

Systems thinking and causal loop diagrams on one page

If system thinking is new to you, here are a few notes on how to read causal loop diagrams.

Causal loop diagrams portray chains of causality, and are comprised of a series of links, such as:-



This captures the idea that the *customer base* is a key driver of *revenue* (as indicated by the direction of the arrow); also, the *S* indicates that an increase in the *customer base* causes an increase in *revenue*.

An alternative to an *S* is an *O*, as in the relationship:-



which represents the fact that, in general, an enhancement to the *actual infrastructure* causes a decrease in the *actual delivery time*.

A remarkable feature of real systems is that the chains of cause-and-effect relationships inevitably form closed feedback loops. These are of only two types:-

reinforcing loops, which show exponential growth or decline, and are characterised by having an even number of *O*'s around the loop (with zero counting as an even number)

balancing loops, which oscillate, or converge on a target, or slow down an associated reinforcing loop, and are characterised by having an odd number of *O*'s around the loop.

Real systems, as the following diagrams demonstrate, comprise interconnected networks of reinforcing and balancing loops, and computer models can be very powerful in simulating their overall dynamic behaviour.

Our starting point is our *ambition to grow* the business...

**Growth
ambition**

...which drives the need for marketing, which in turn leads to the agreement of a *target* spend on *marketing*.



The *target* spend on *marketing* can be compared to the *actual* spend on *marketing*...

Target
marketing



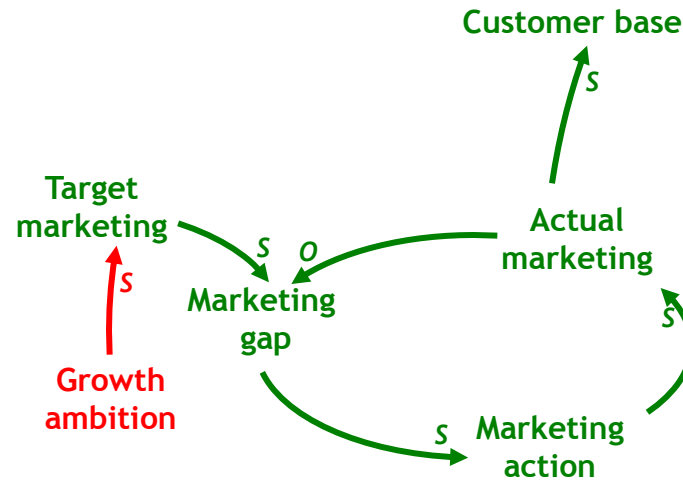
Growth
ambition

Actual
marketing

...so identifying the *marketing gap*...

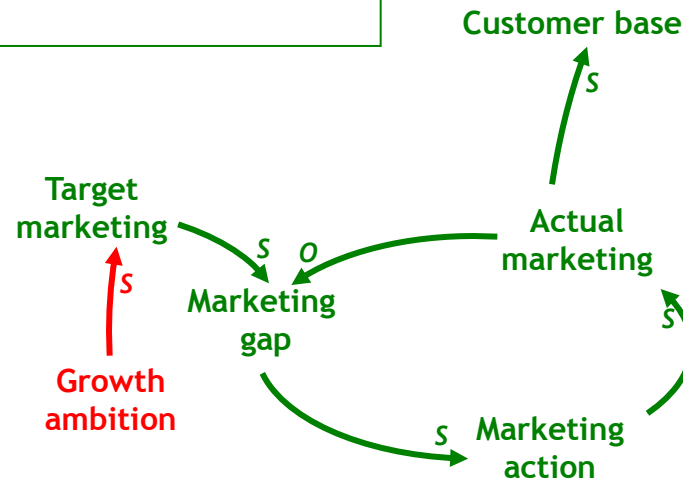


...which is addressed by appropriate *marketing action* such as advertising, promotions and the like.

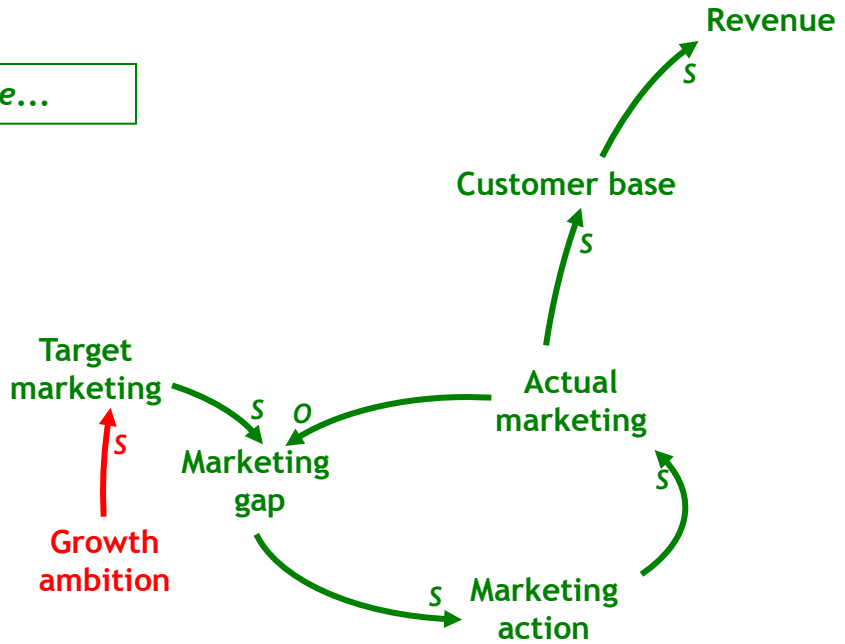


This completes a balancing loop, whereby the *marketing action* comes into line with the *target marketing* - this being the way in which systems thinking represents the fulfilment of the marketing budget.

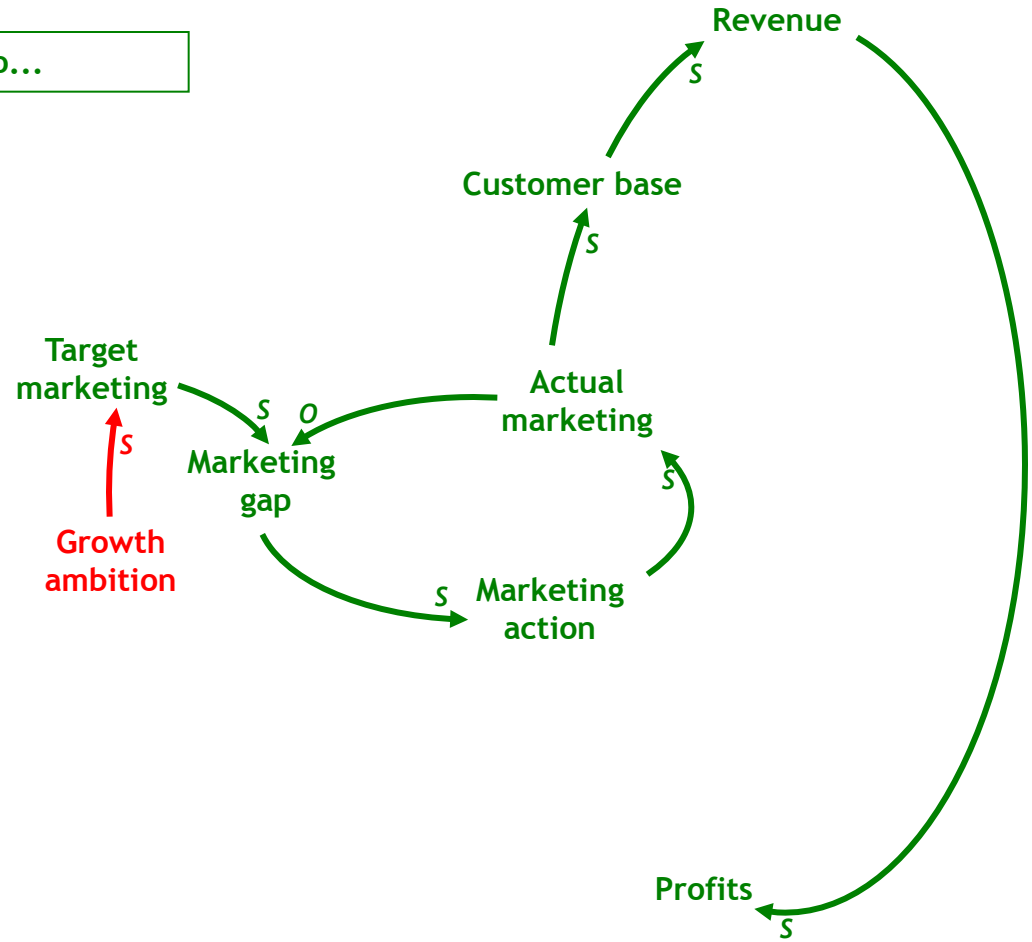
As the *actual marketing* increases as a result of the *marketing action*, more customers are attracted, so increasing our *customer base*...



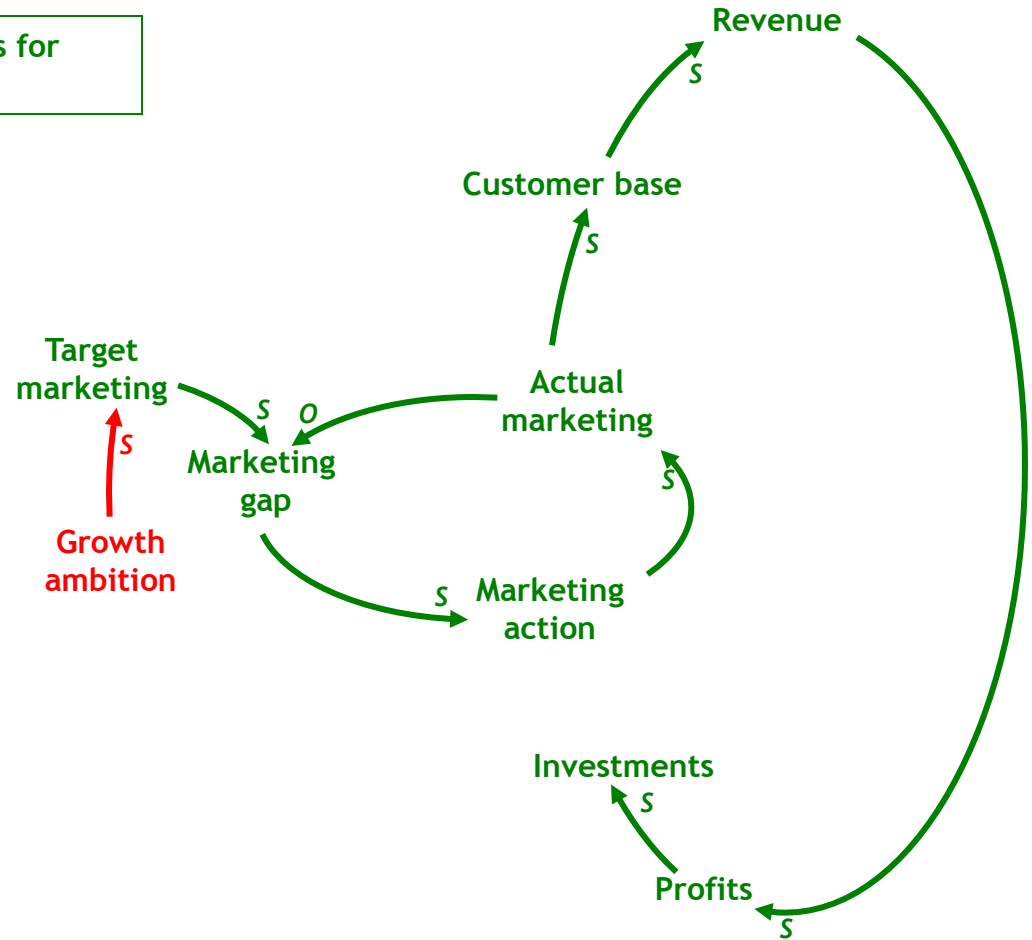
...driving revenue...



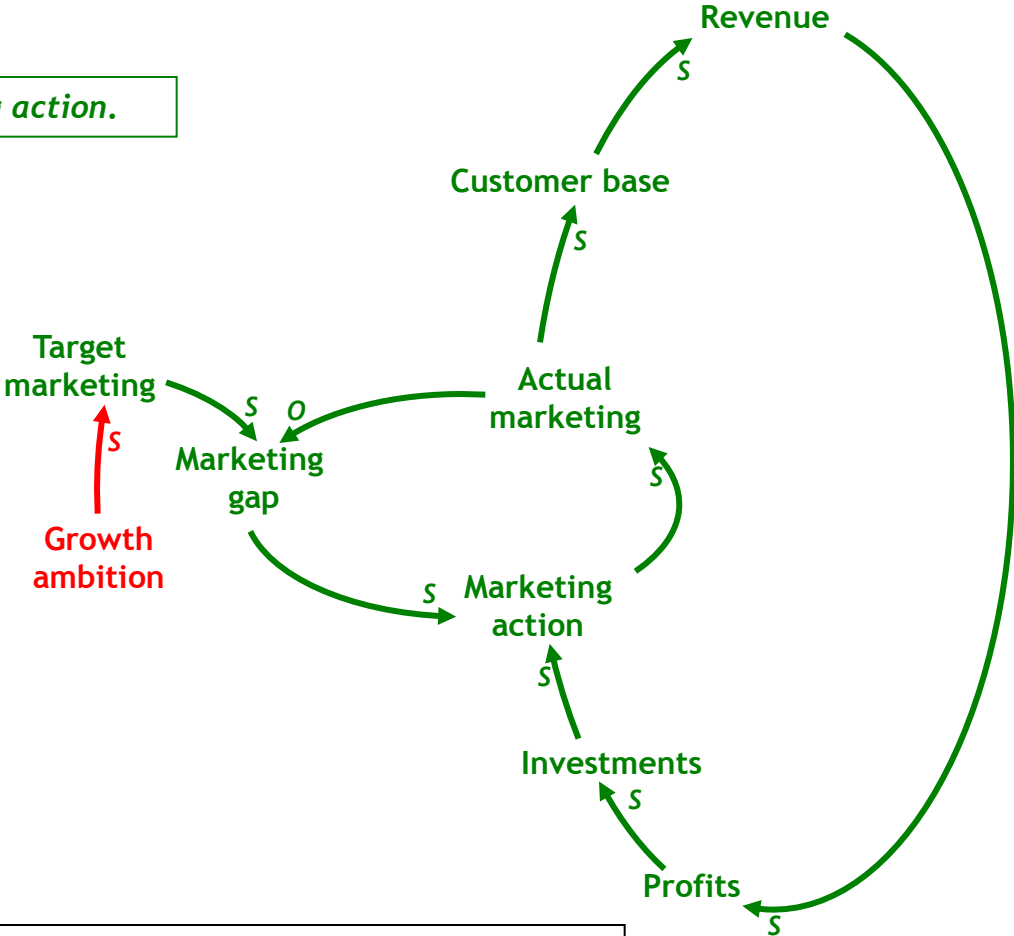
...and profits too...



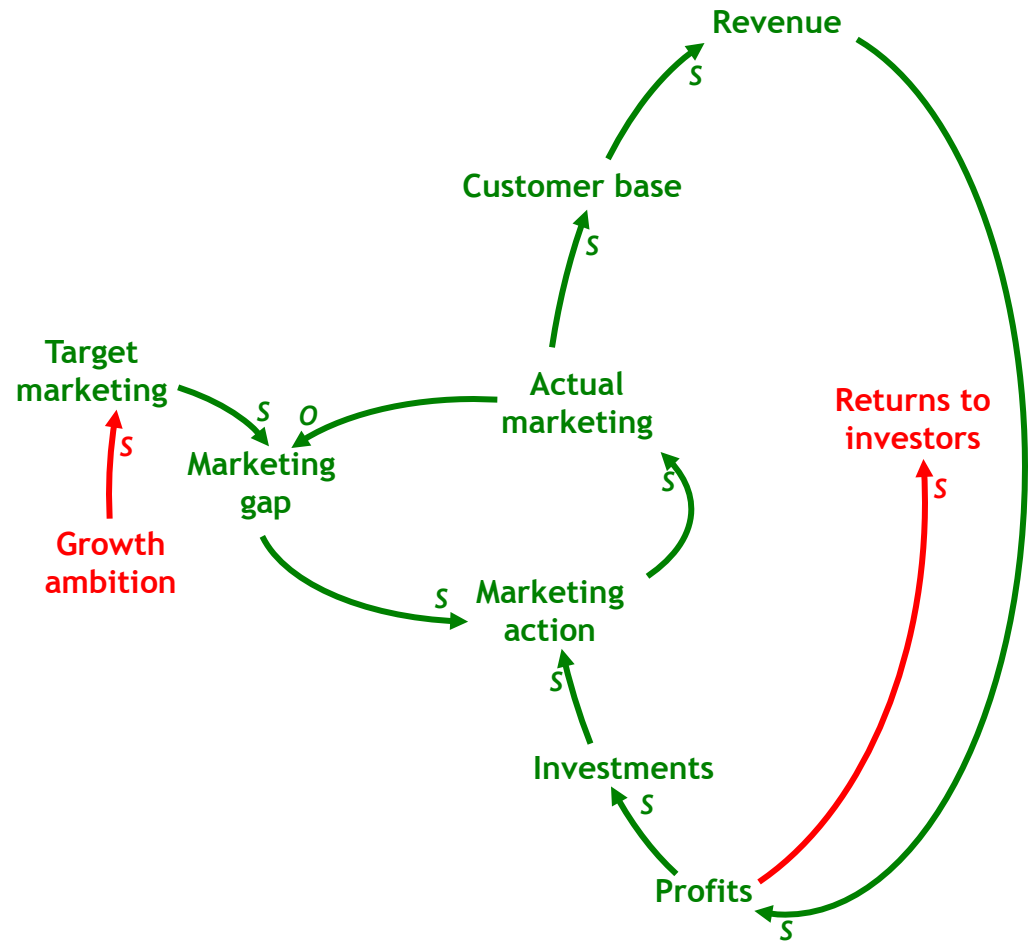
...so providing the funds for investment...



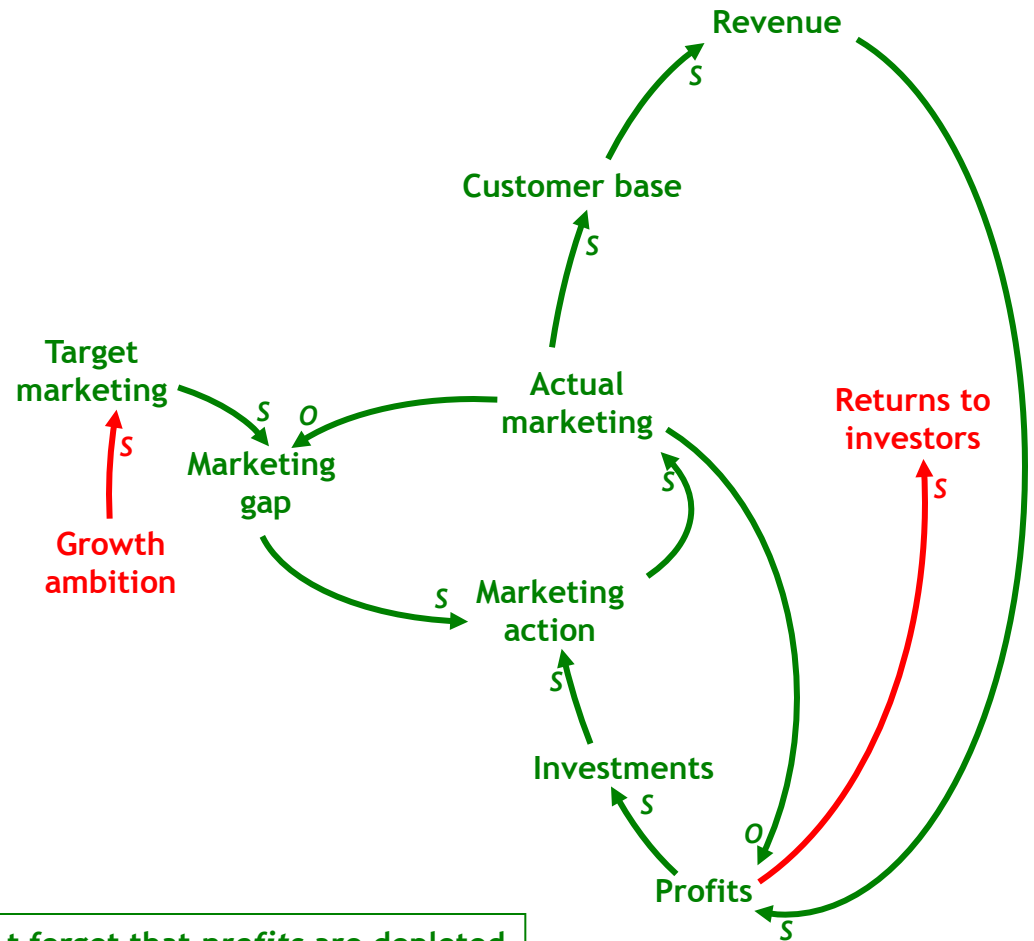
...which are spent on the *marketing action*.



This completes a reinforcing loop, driving exponential growth in the business, so fulfilling the original *growth ambition*.

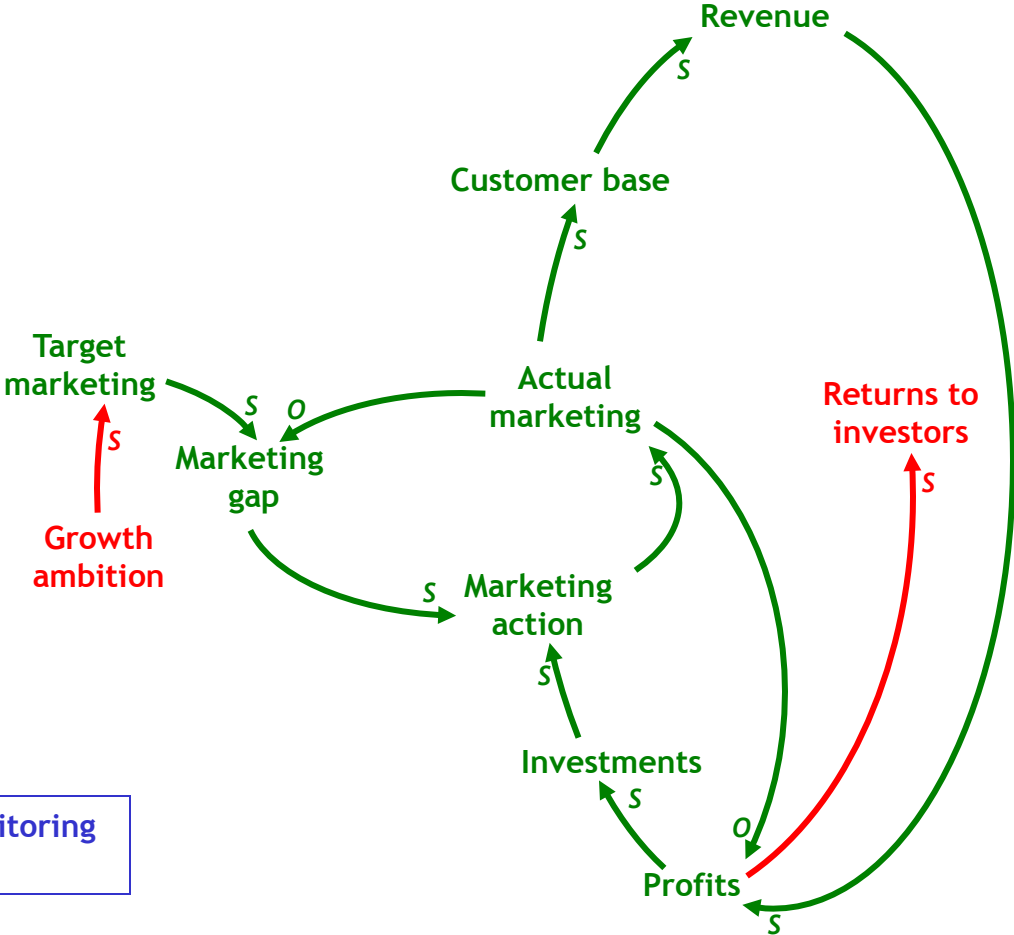


The *profits* are also the source of the *returns to investors*, shown here as representing the overall result of the system.



And we mustn't forget that *profits* are depleted by the day-to-day costs of the *actual marketing*.

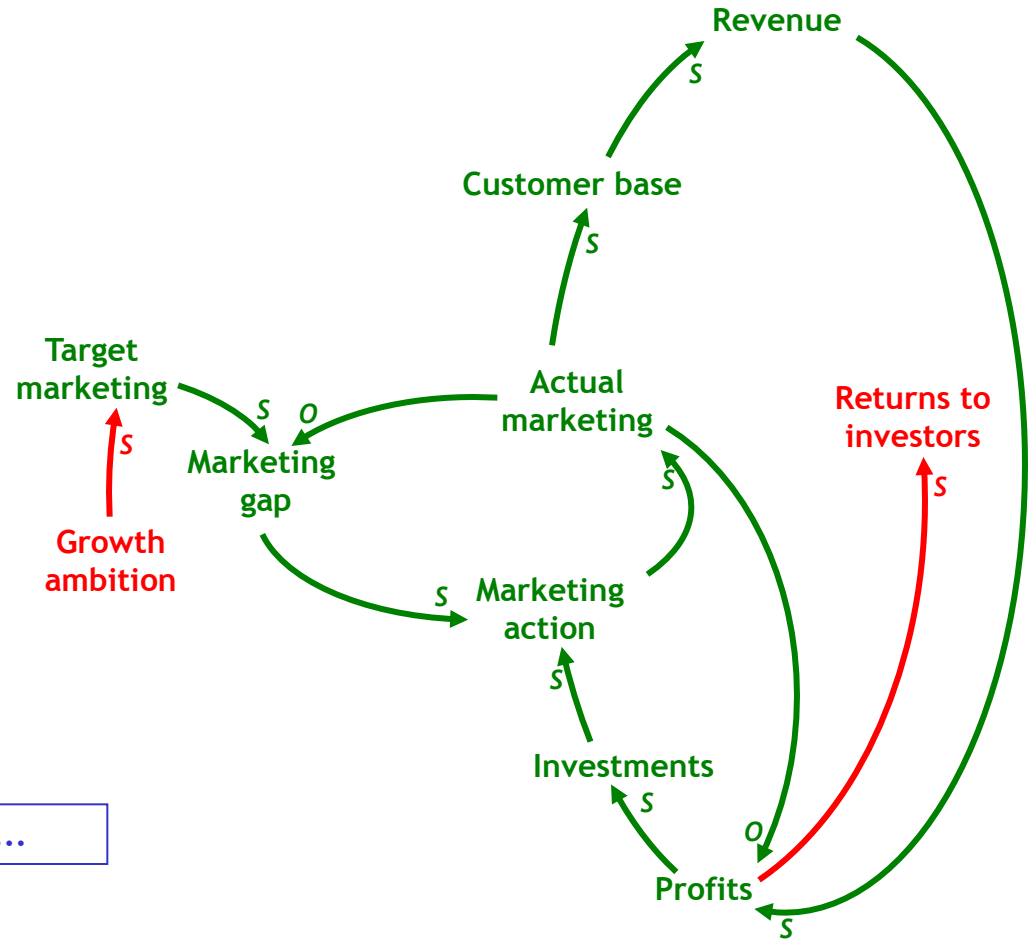
Actual
delivery time



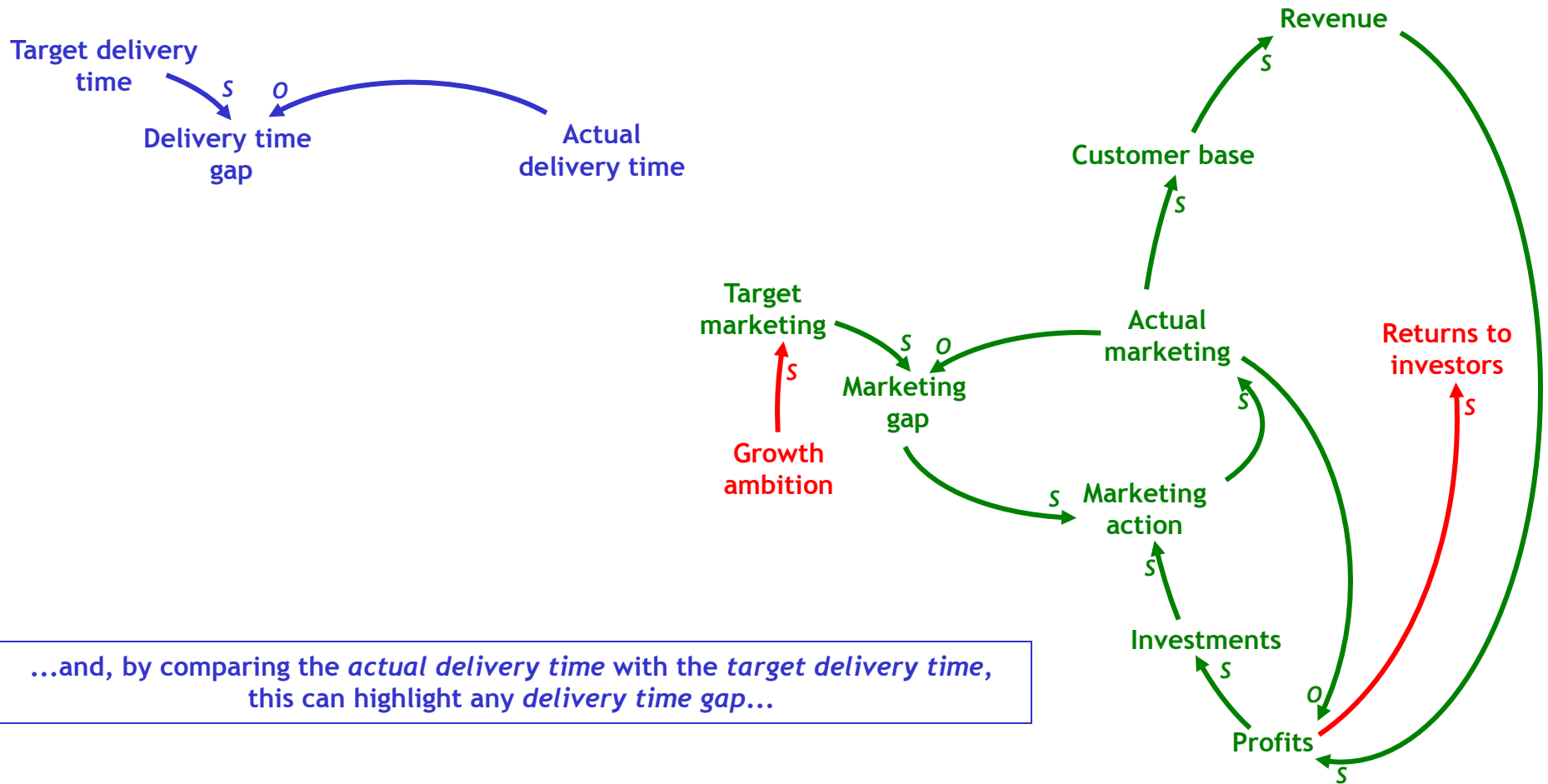
Keen to deliver a great service, we are always monitoring
our *actual delivery time* of orders...

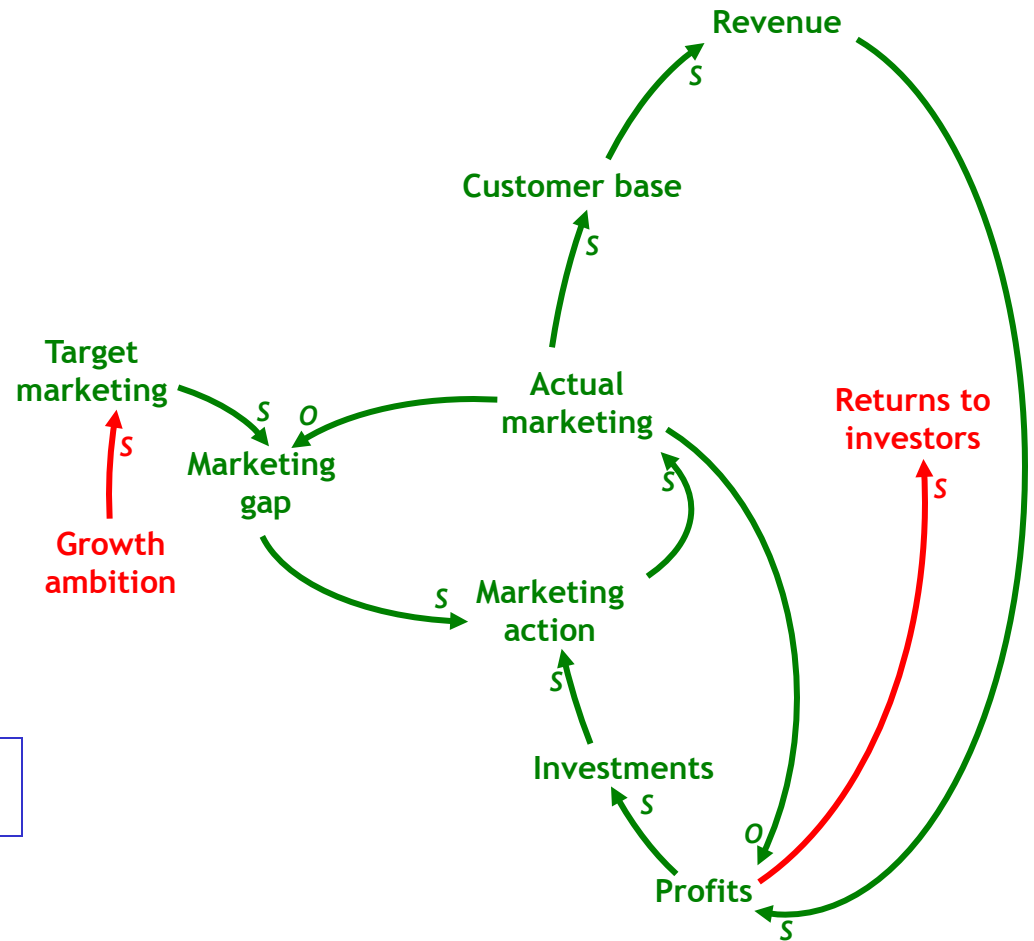
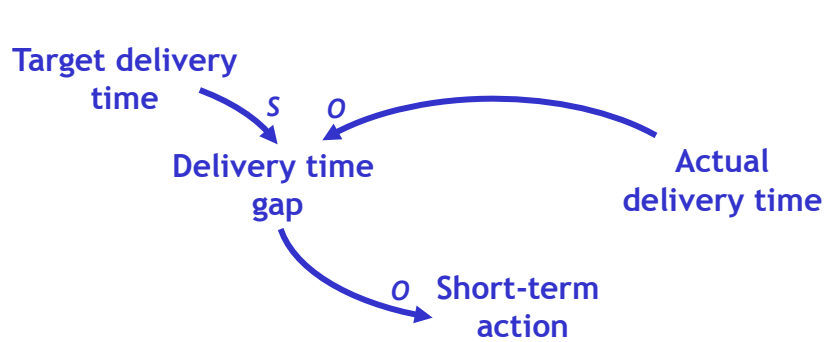
Target delivery time

Actual delivery time



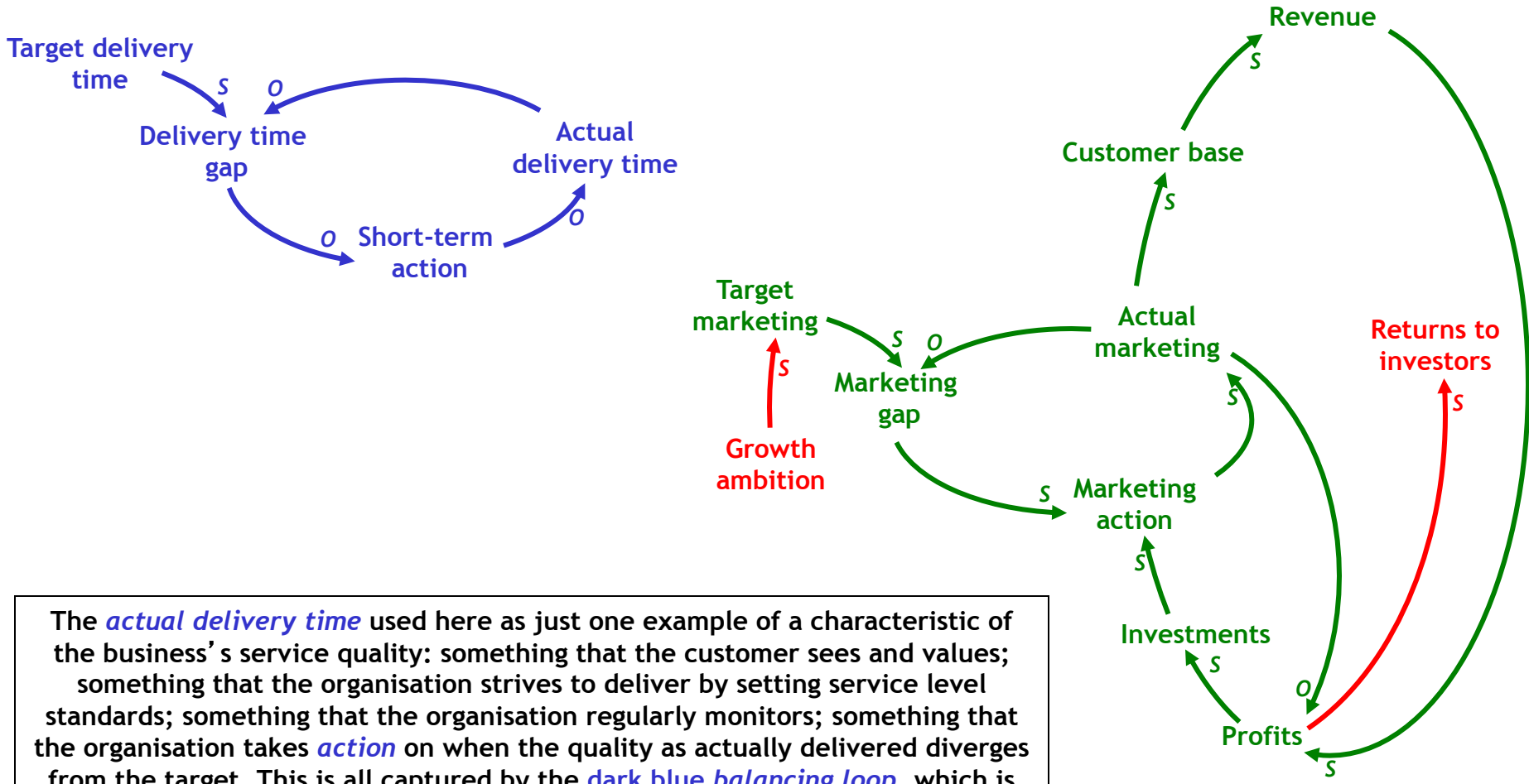
...in the light of stringent performance *targets*...





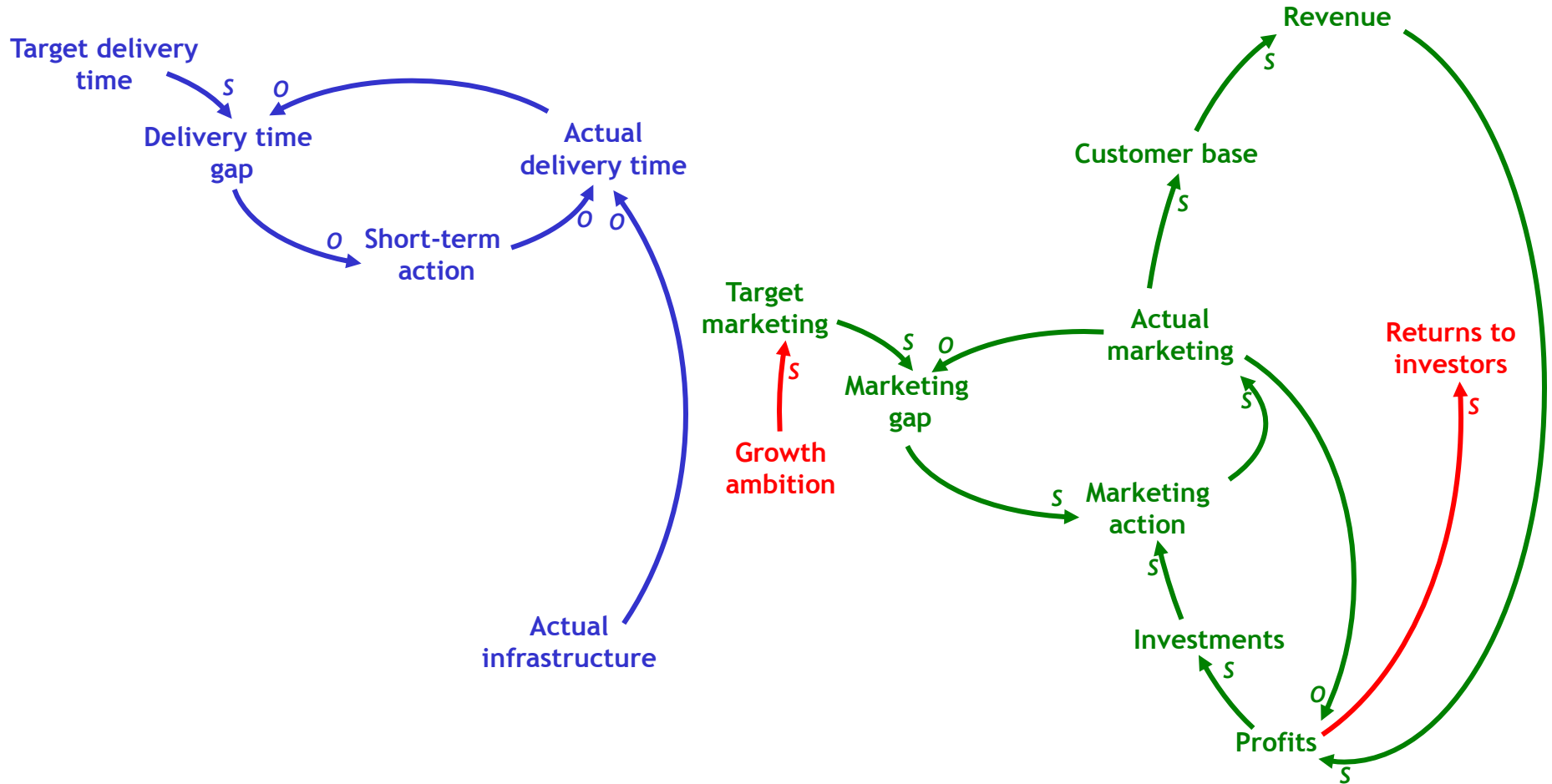
...which leads to any required *short-term action*, such as the authorisation of overtime...

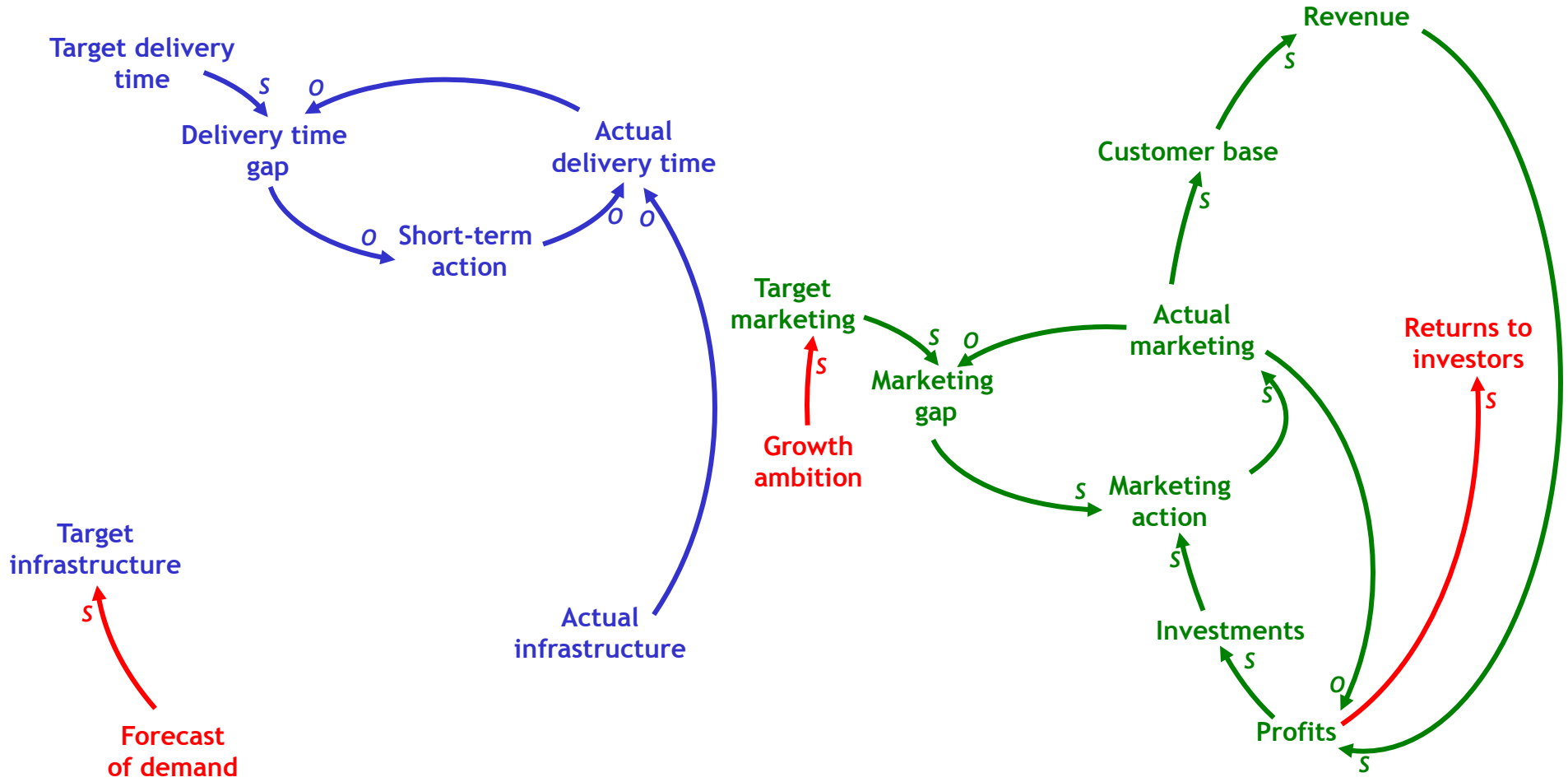
...which acts to bring the *actual delivery time* back in line with the *target delivery time*.



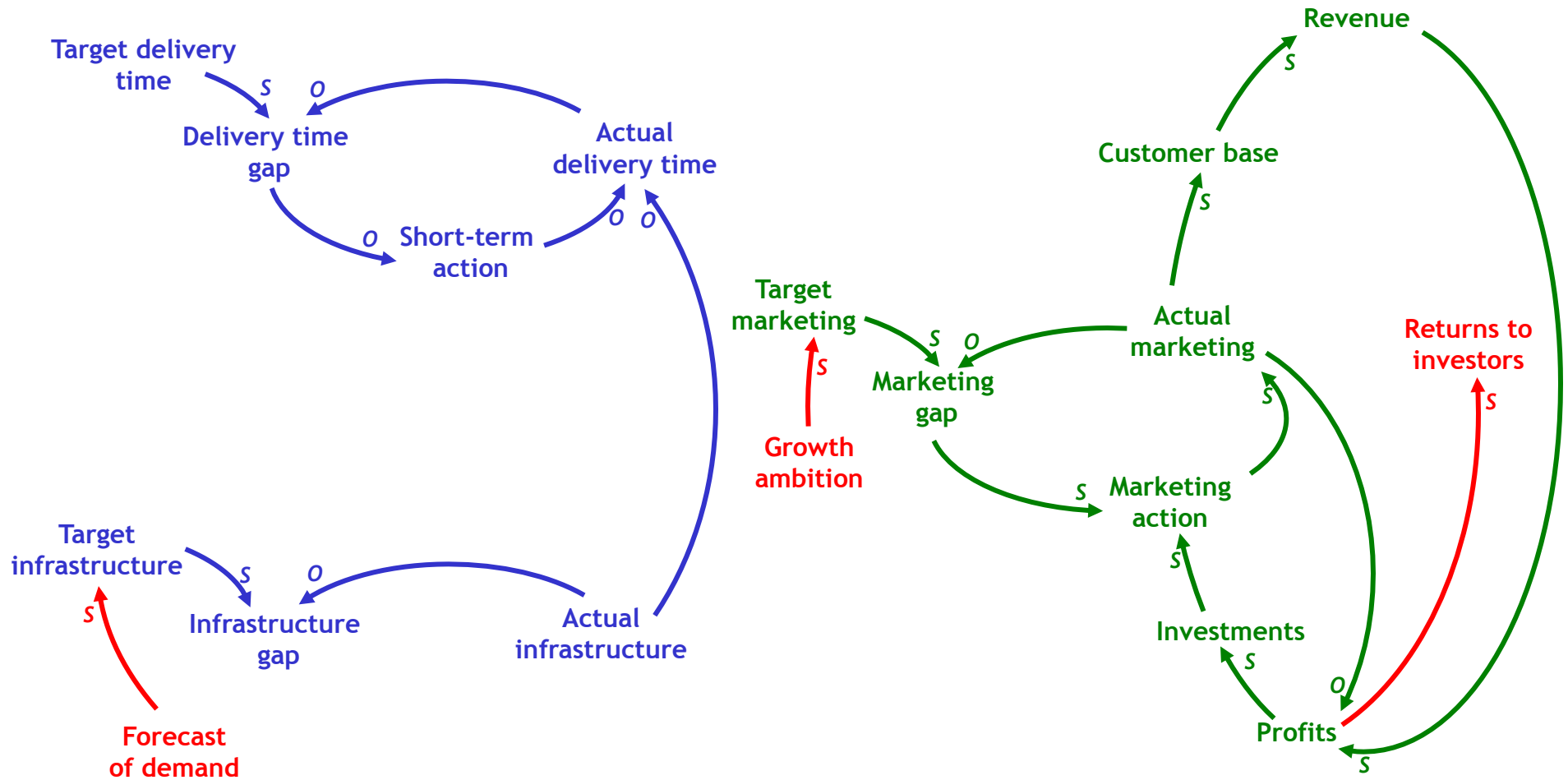
The *actual delivery time* used here as just one example of a characteristic of the business's service quality: something that the customer sees and values; something that the organisation strives to deliver by setting service level standards; something that the organisation regularly monitors; something that the organisation takes *action* on when the quality as actually delivered diverges from the target. This is all captured by the *dark blue balancing loop*, which is designed to bring the *actual* into line with the *target*. Other similar balancing loops can be drawn for all the other quality characteristics such as the *transaction error rate*, *response time* or whatever.

The *actual delivery time* is the result of the *actual infrastructure*, this being an aggregate of staff, premises and equipment which collectively deliver the service. In general, the more robust and extensive the *actual infrastructure*, the lower the *actual delivery time*.

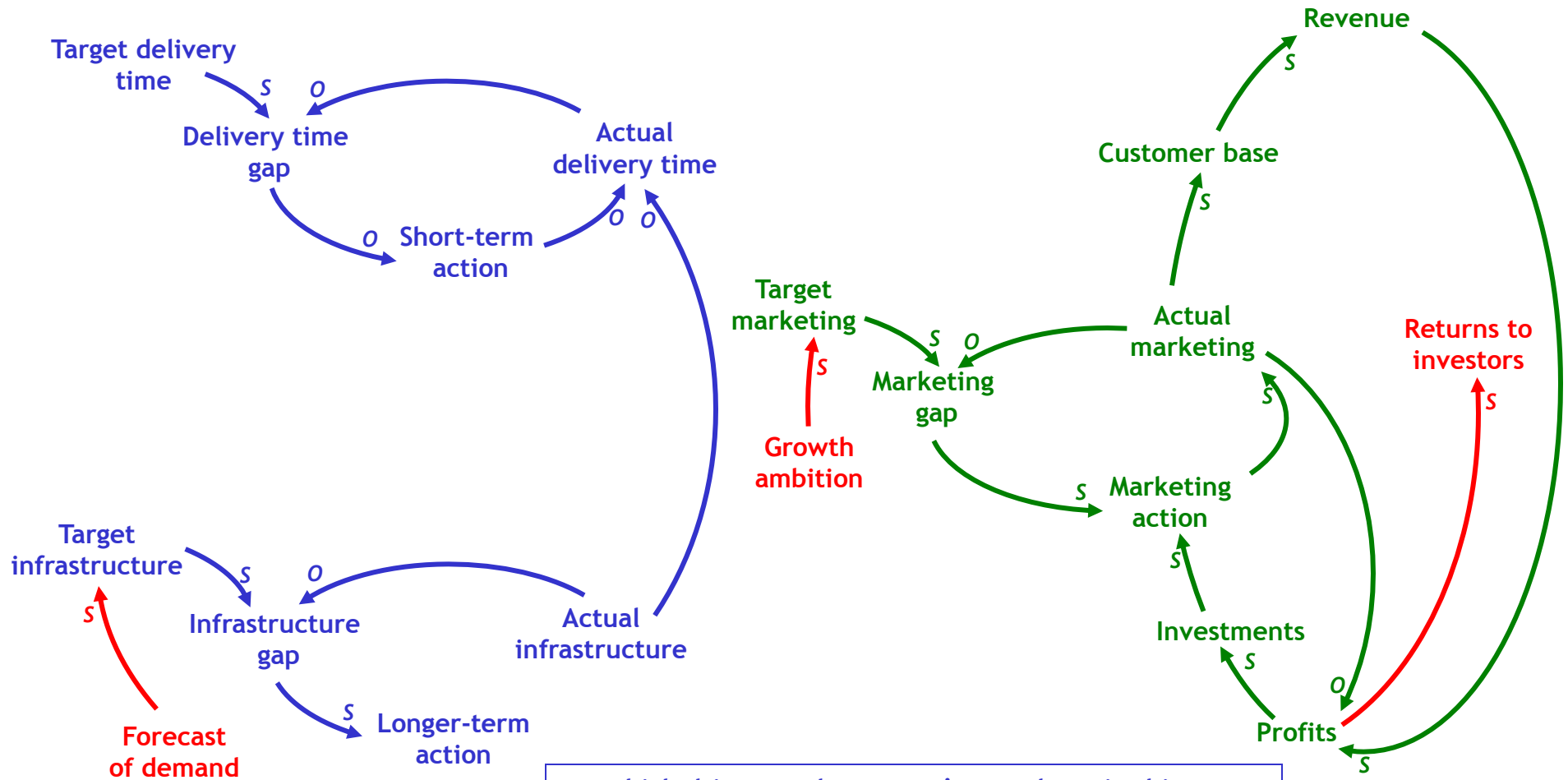




Associated with the *actual infrastructure* is a *target infrastructure*, planned in the context of a longer-term *forecast of demand*...

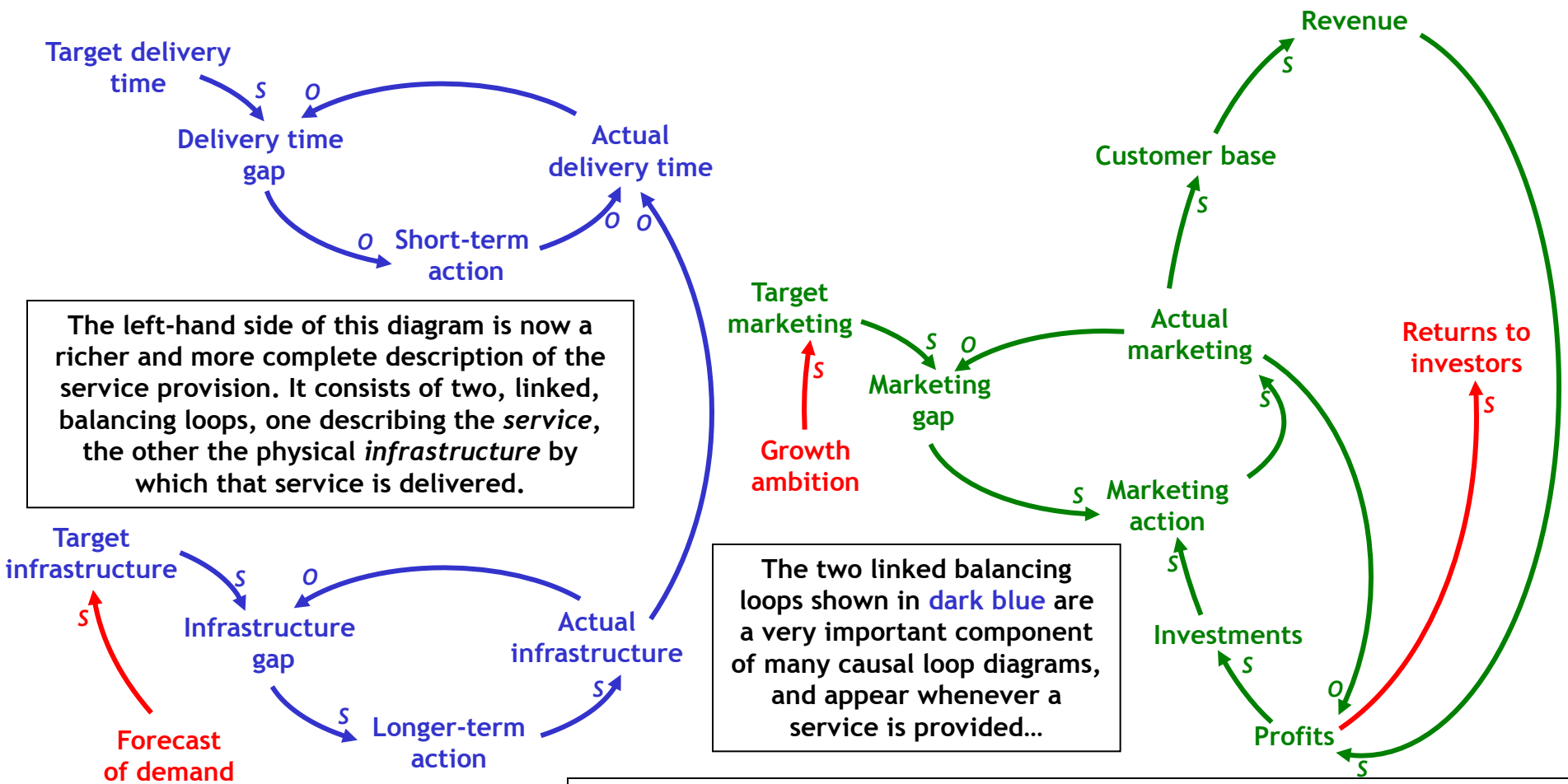


...and whenever there is *target* and an *actual*, there is always the corresponding *gap*...



...which drives a relevant *action*, such as, in this case, to hire or fire staff, or to purchase or dispose of equipment, all of which are *longer-term actions* in comparison to *short-term actions* such as overtime...

...so that the *actual infrastructure* can be brought into line with the *target infrastructure*.

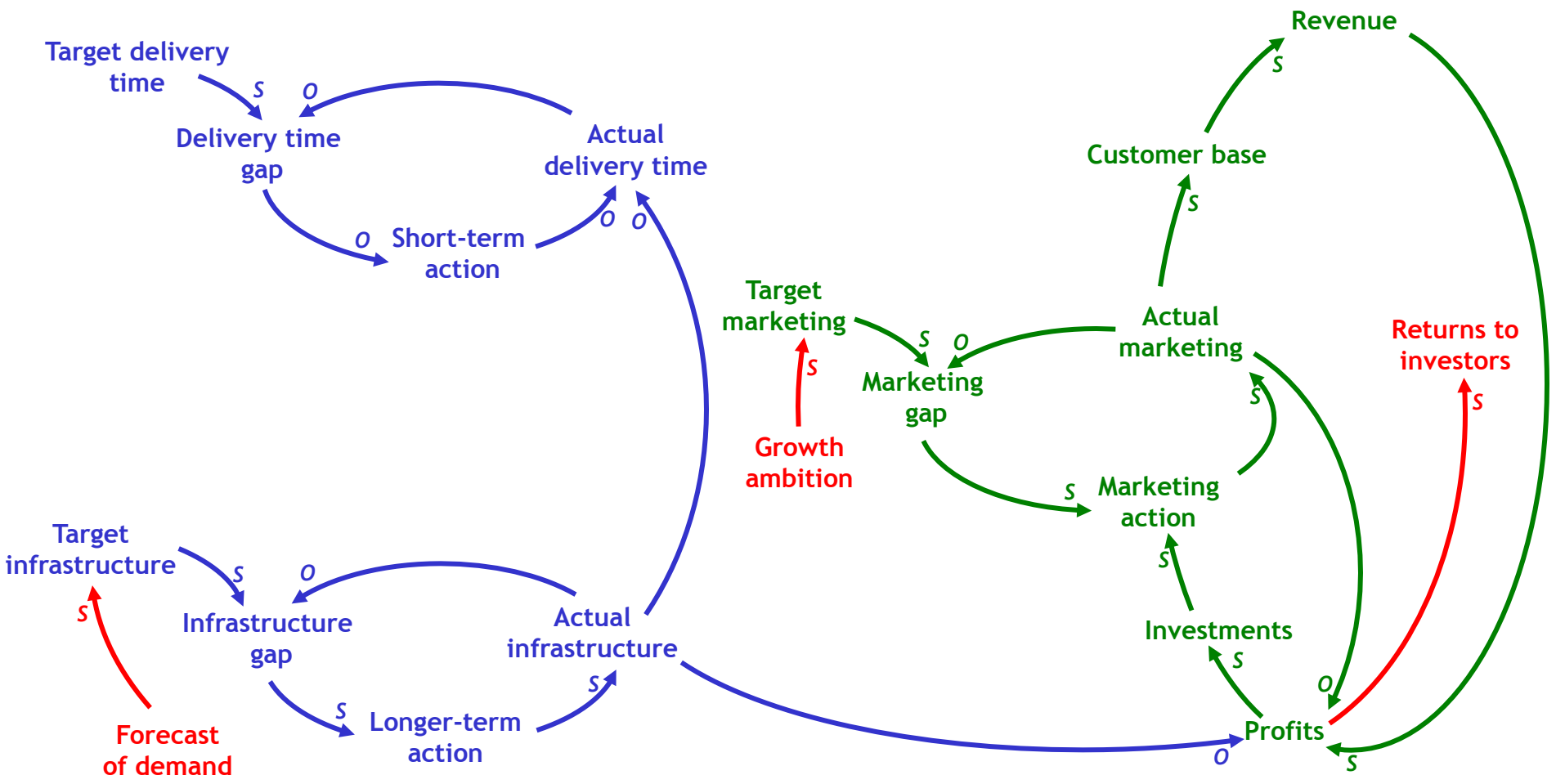


The left-hand side of this diagram is now a richer and more complete description of the service provision. It consists of two, linked, balancing loops, one describing the *service*, the other the physical *infrastructure* by which that service is delivered.

The two linked balancing loops shown in dark blue are a very important component of many causal loop diagrams, and appear whenever a service is provided...

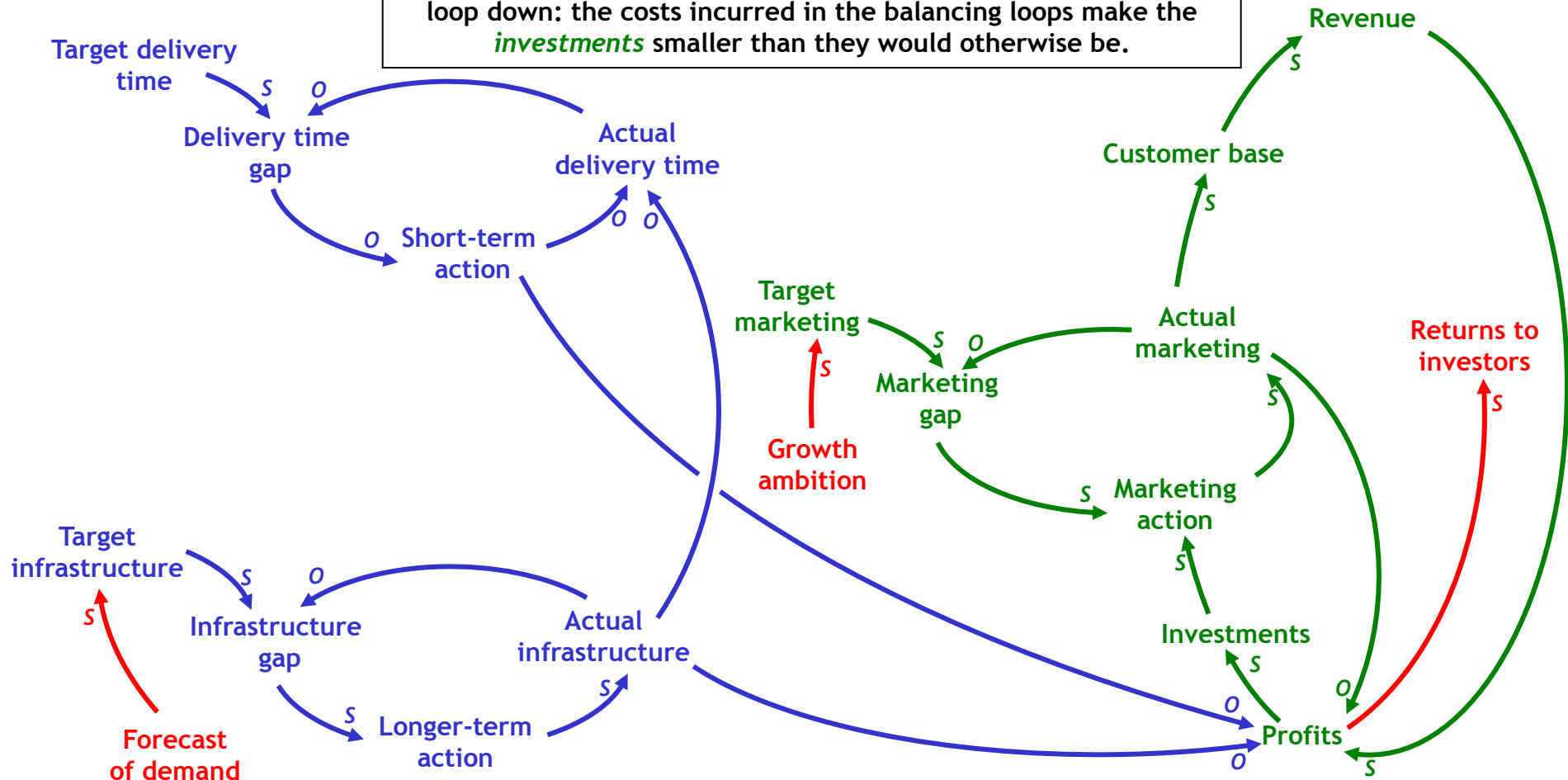
...but at present, the two sides of the diagram are separate: the right-hand side describes a marketing-driven engine of business growth, and the left-hand side, the provision of the infrastructure and the corresponding service. Are the two sides of the business connected? And if so, how?

Here is one such link.
 Maintaining the *infrastructure* costs money - staff need to be paid, and equipment kept running. These operating costs deplete *profits*.

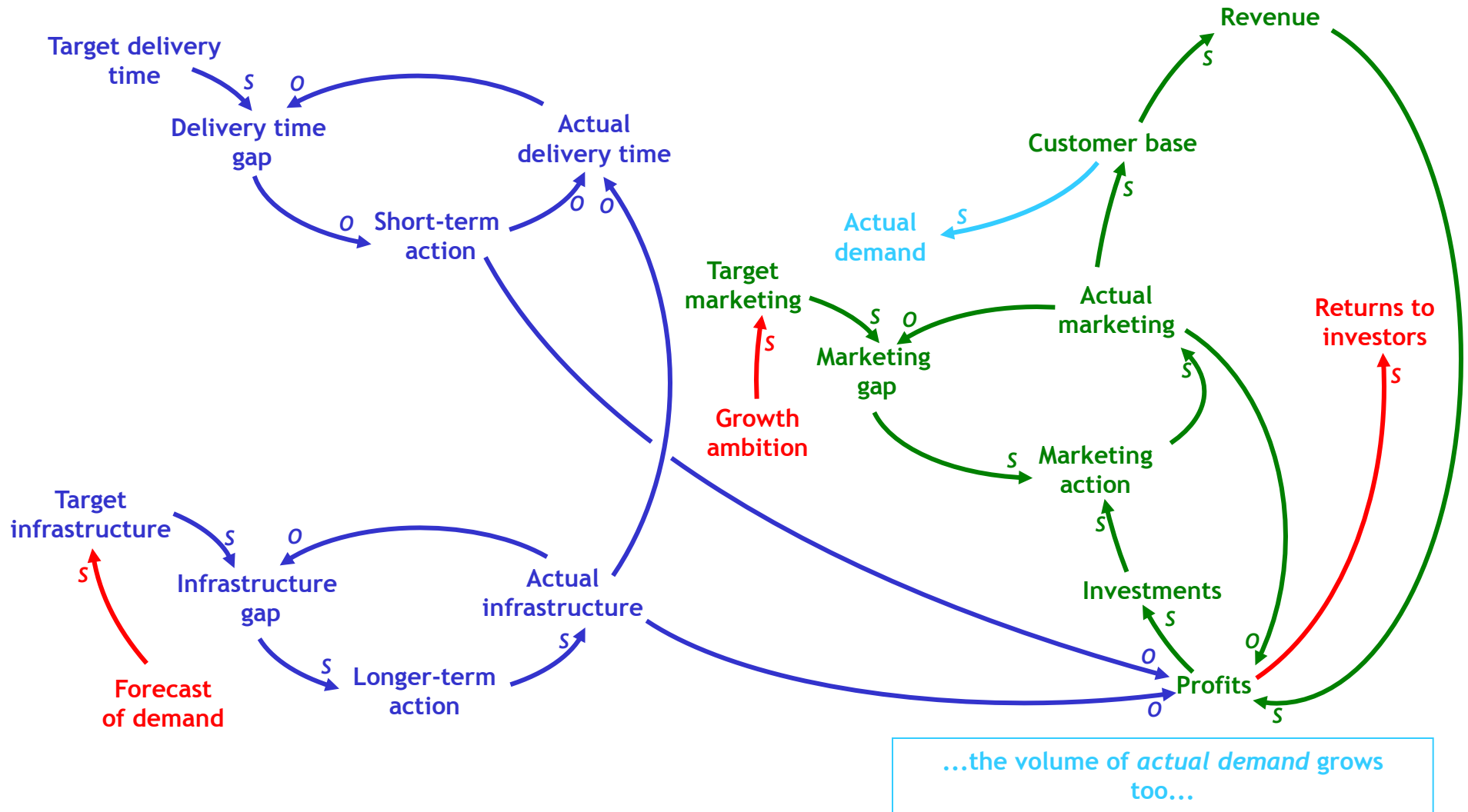


And here is another. Any *short-term action*, such as the requirement for overtime, as needed to keep the *actual delivery time* in line with the *target delivery time*, also incurs a cost, further depleting *profits*.

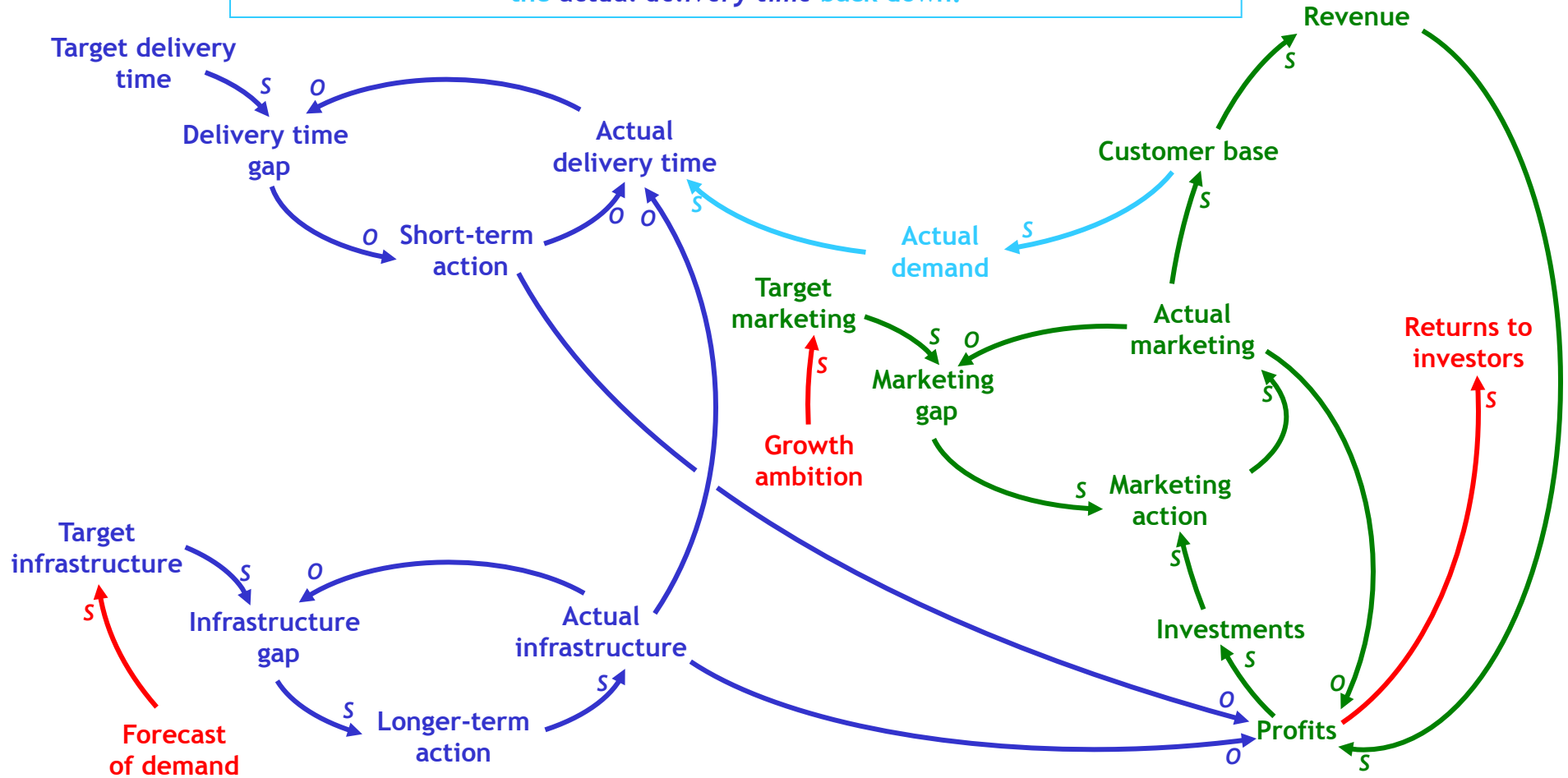
The combined effect of these two links is to slow the reinforcing loop down: the costs incurred in the balancing loops make the *investments* smaller than they would otherwise be.

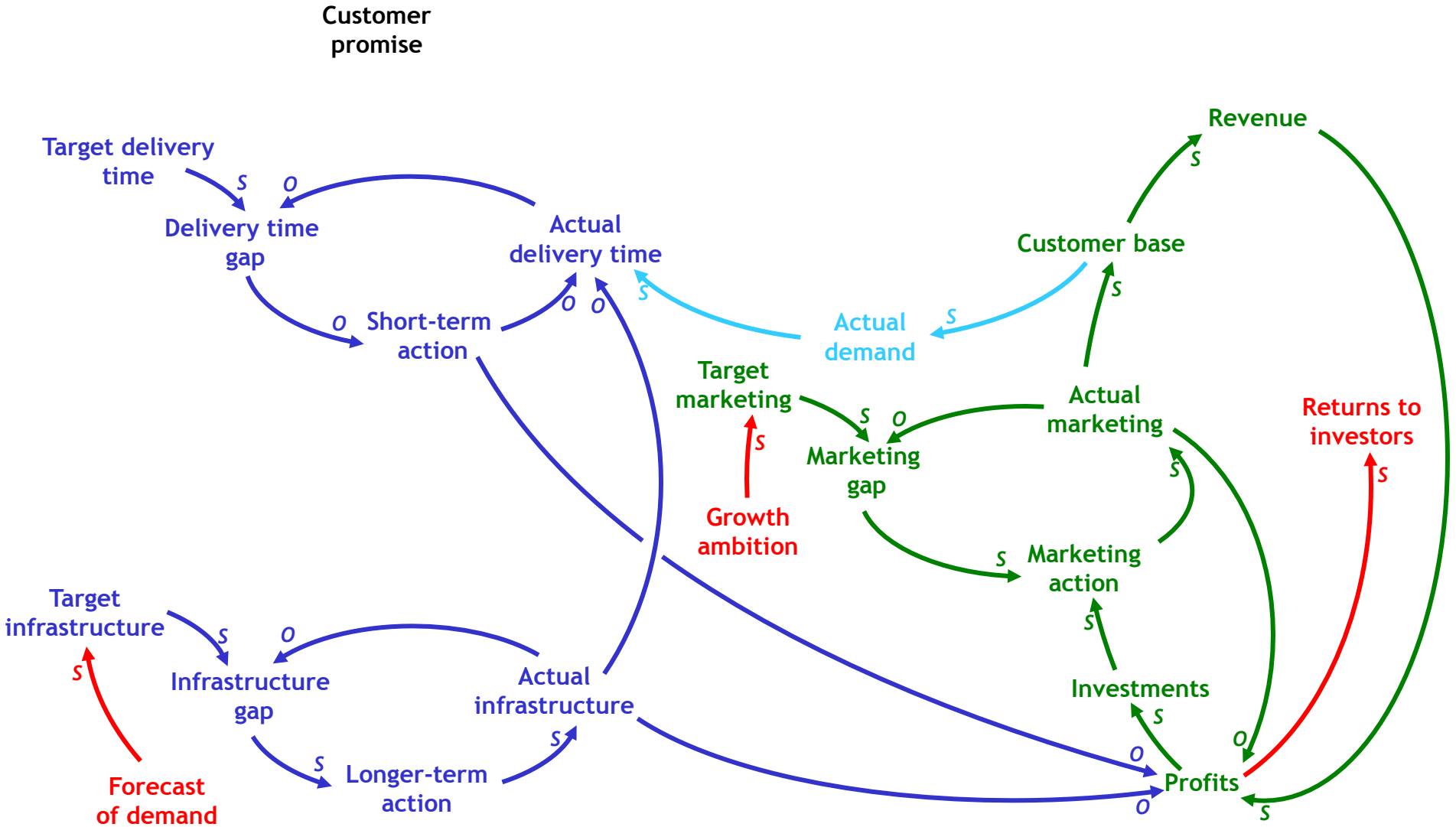


Provided that these costs don't cripple the business, and that the infrastructure capacity is not stretched, that's quite manageable, and the business can continue to grow, albeit perhaps rather slowly. But as the growth engine spins away, and the *customer base* gets progressively bigger...

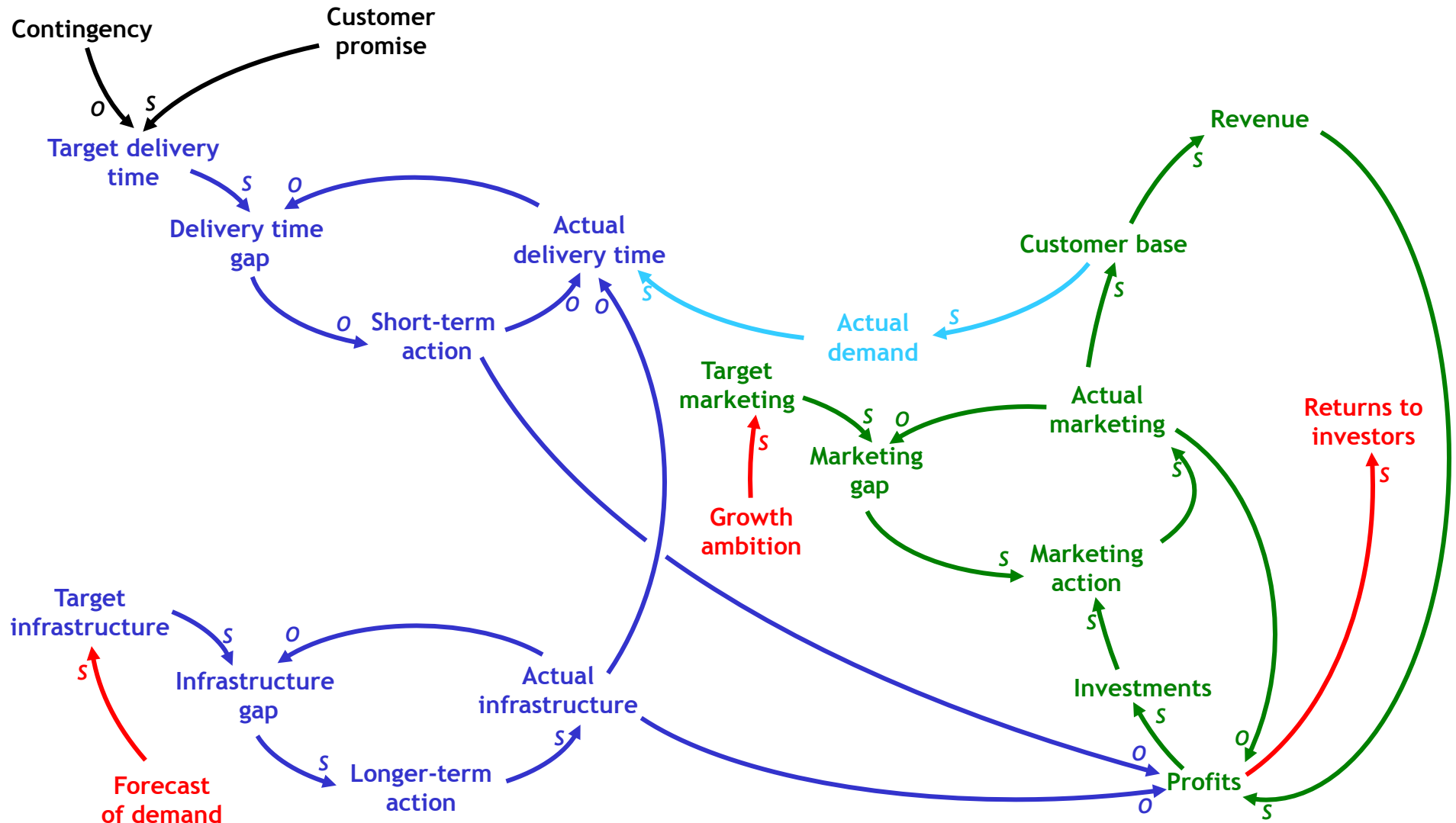


...and, as the capacity limit of the *actual infrastructure* is approached, the bigger the *actual demand*, the longer the *actual delivery time*.
 Once the *actual delivery time* exceeds the *target delivery time*, this opens the *delivery time gap*, triggering *short-term action* such as overtime, to bring the *actual delivery time* back down.

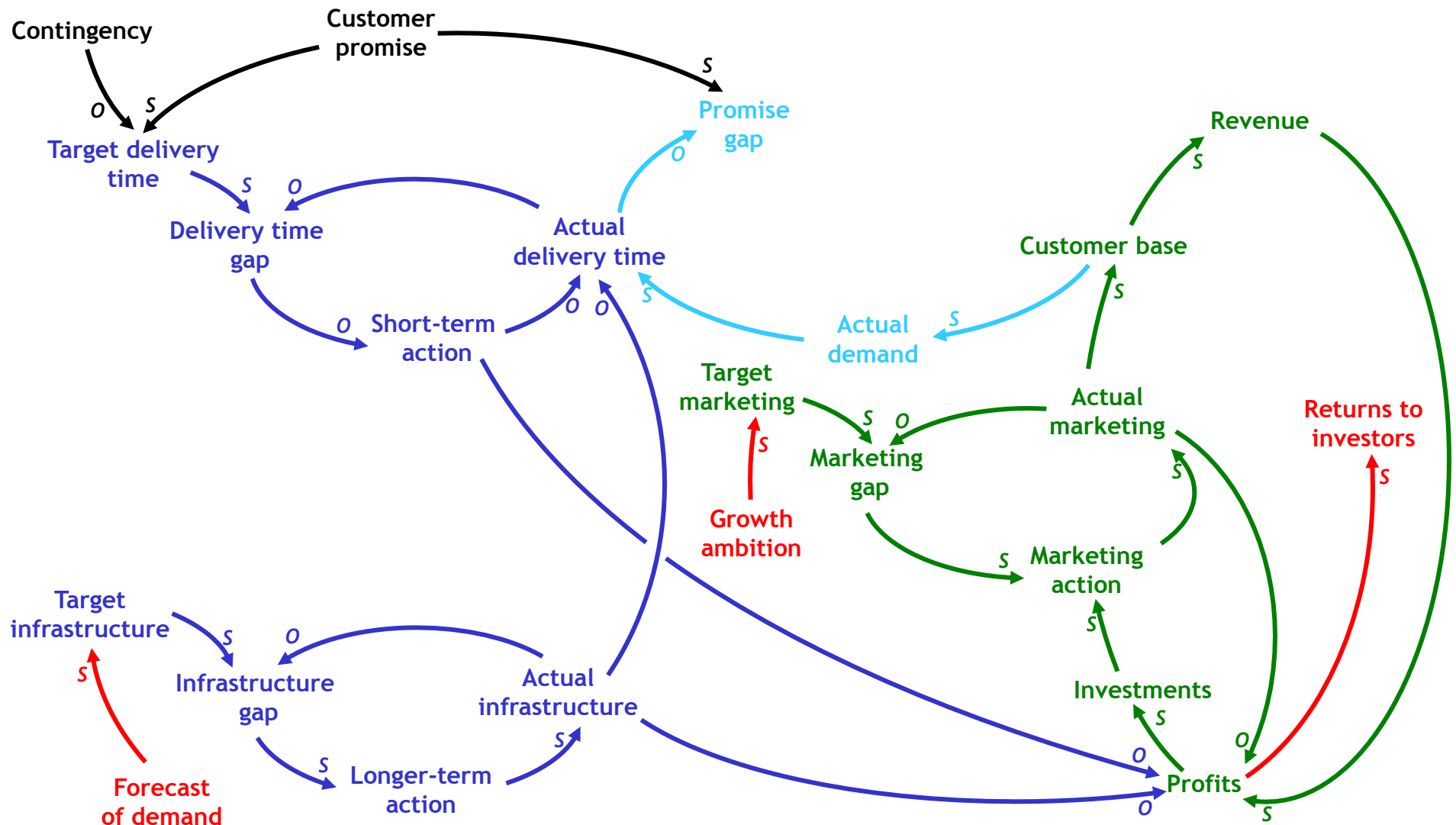




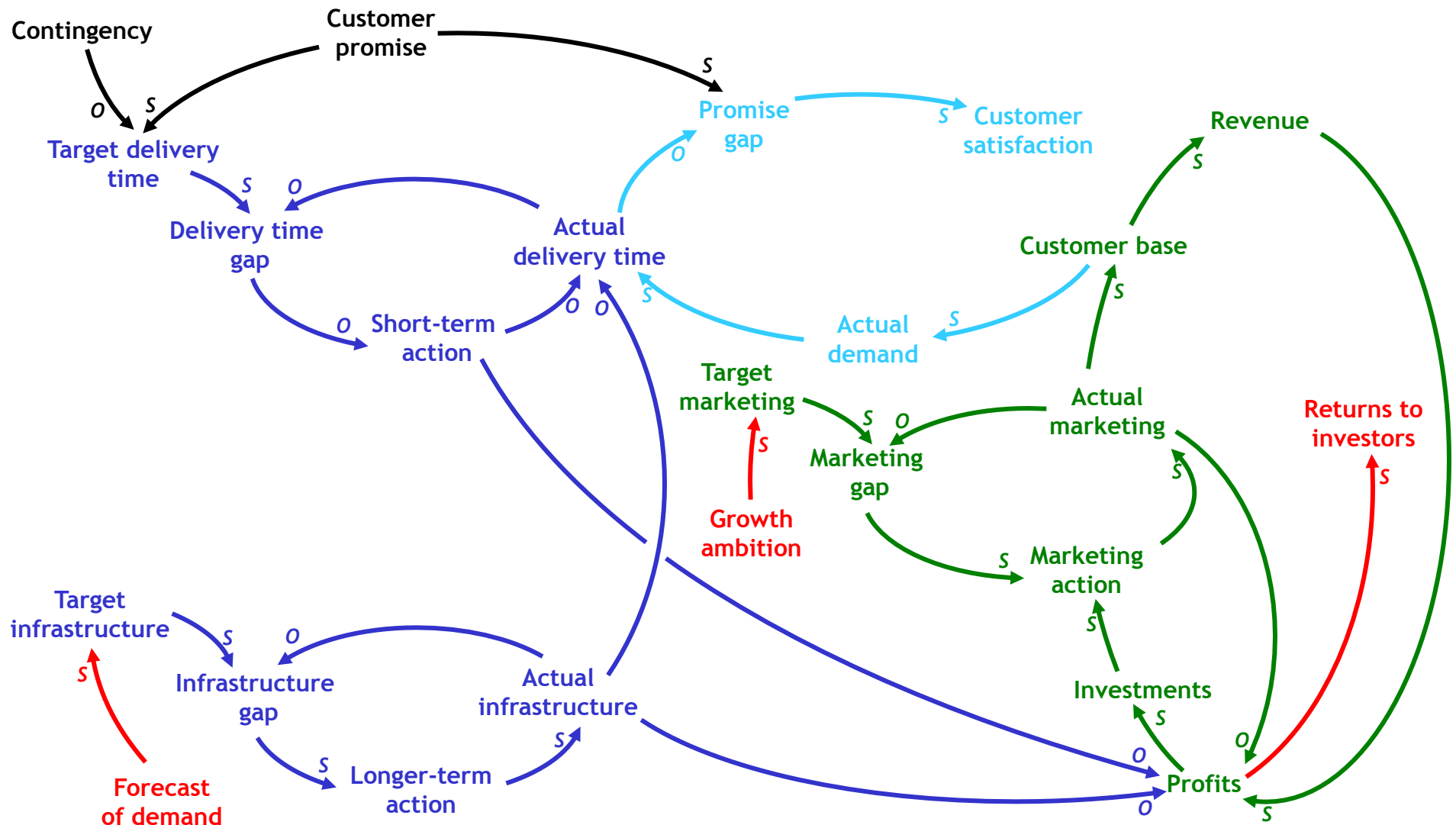
This is important, for the *actual delivery time* is perceived by our *customer base* as the time taken for the delivery of our service: something we have committed to in terms of our *customer promise*...



...which we will have in mind when we set our *target delivery time* - clearly, we will set this target so that we can be confident we will deliver our *customer promise*, with an appropriate *contingency* built in.

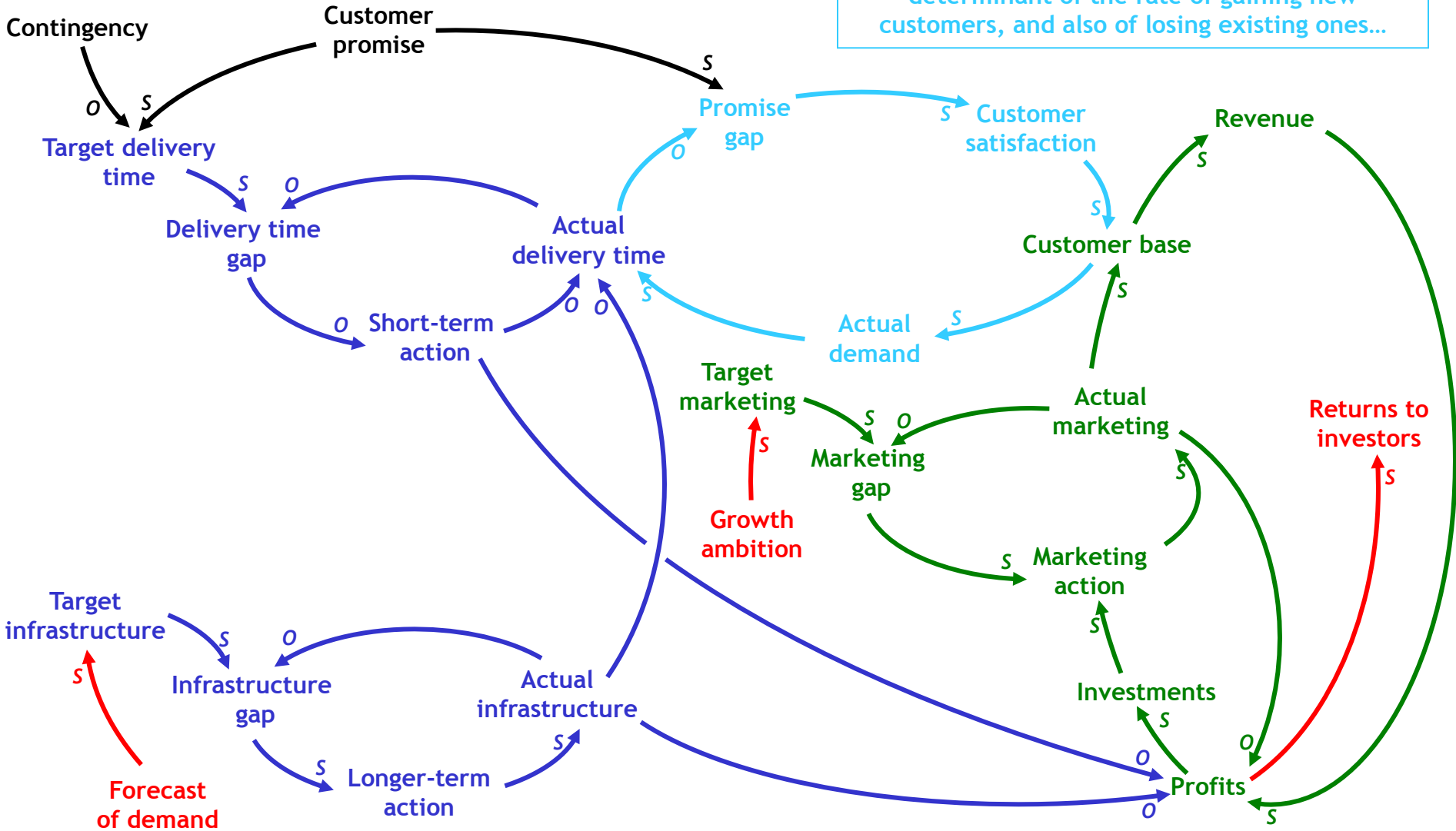


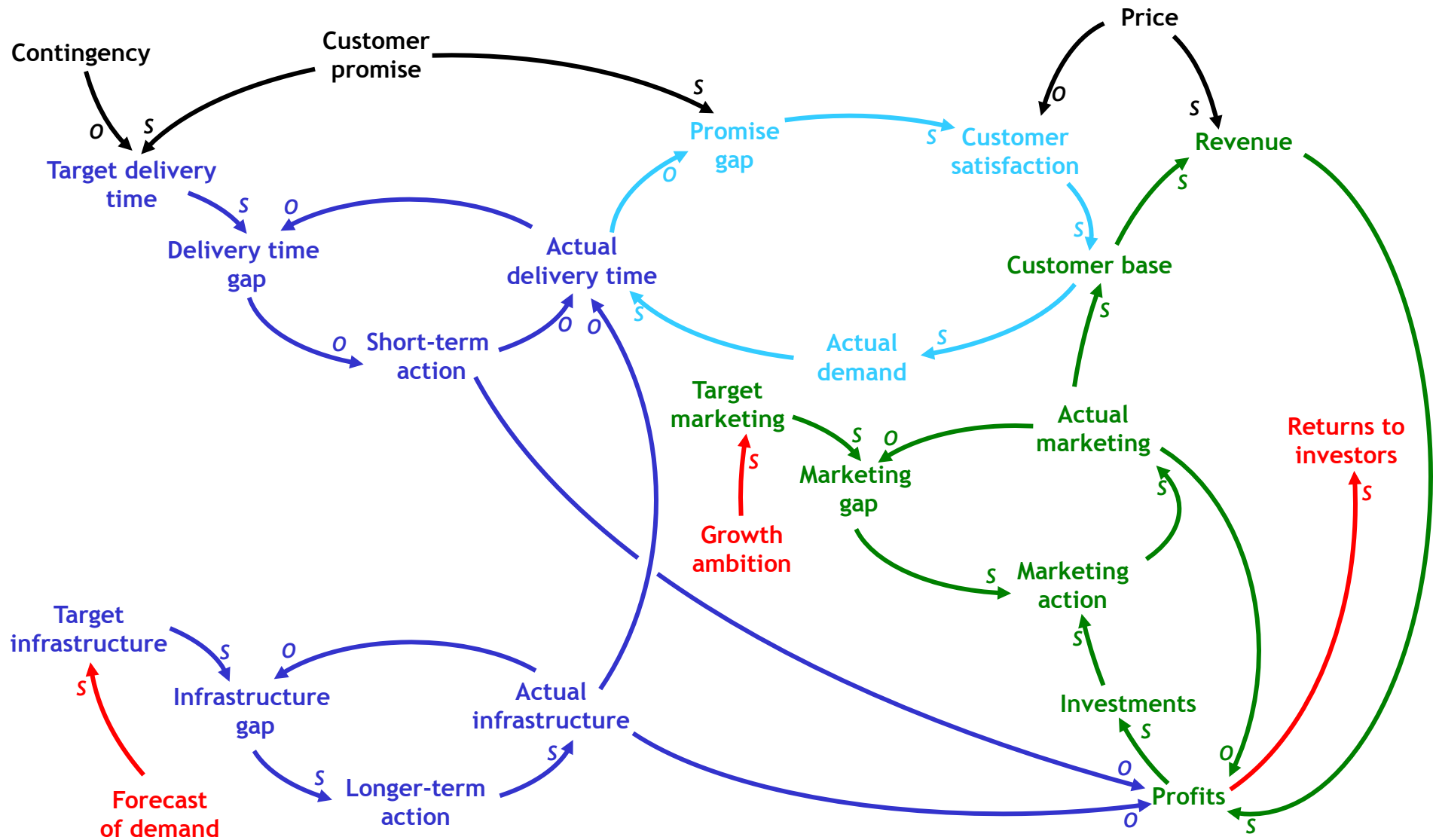
The *customer promise* is important, for any difference between our *customer promise* and our actual service, as measured internally by the *actual delivery time*, and as perceived by our *customer base*, opens a *promise gap*.



The *promise gap* itself drives *customer satisfaction*: the customer is delighted when our actual delivery time is less than the expectation as set by the *customer promise*; conversely (and probably more dramatically and quickly), when our actual delivery time exceeds our *customer promise*, customers can become upset, and *customer satisfaction* falls.

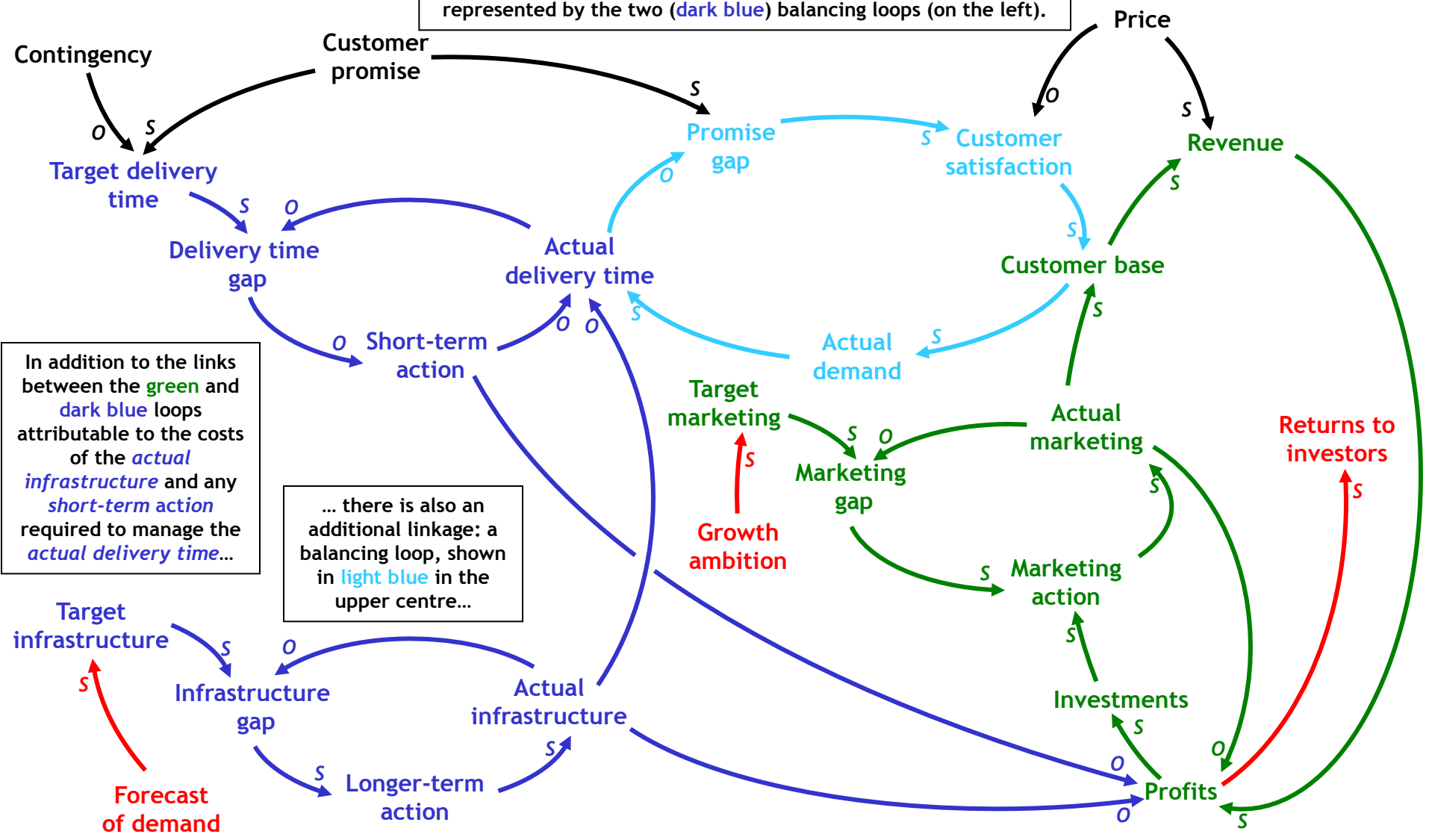
Customer satisfaction is itself a major determinant of the rate of gaining new customers, and also of losing existing ones...





... and *price* is important too.

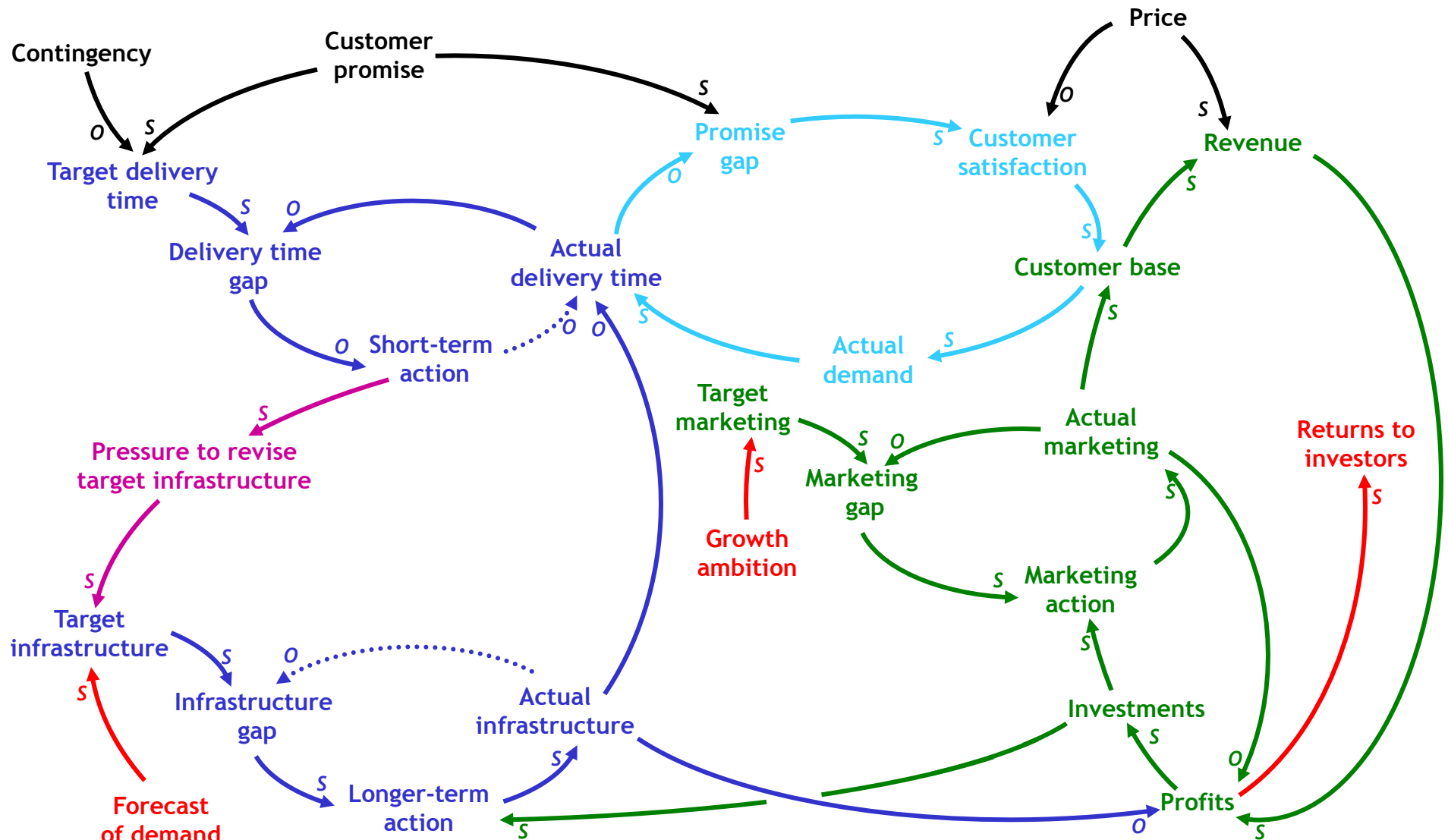
The (green) reinforcing loop representing the engine of business growth (on the right) is now fully connected to the infrastructure, represented by the two (dark blue) balancing loops (on the left).



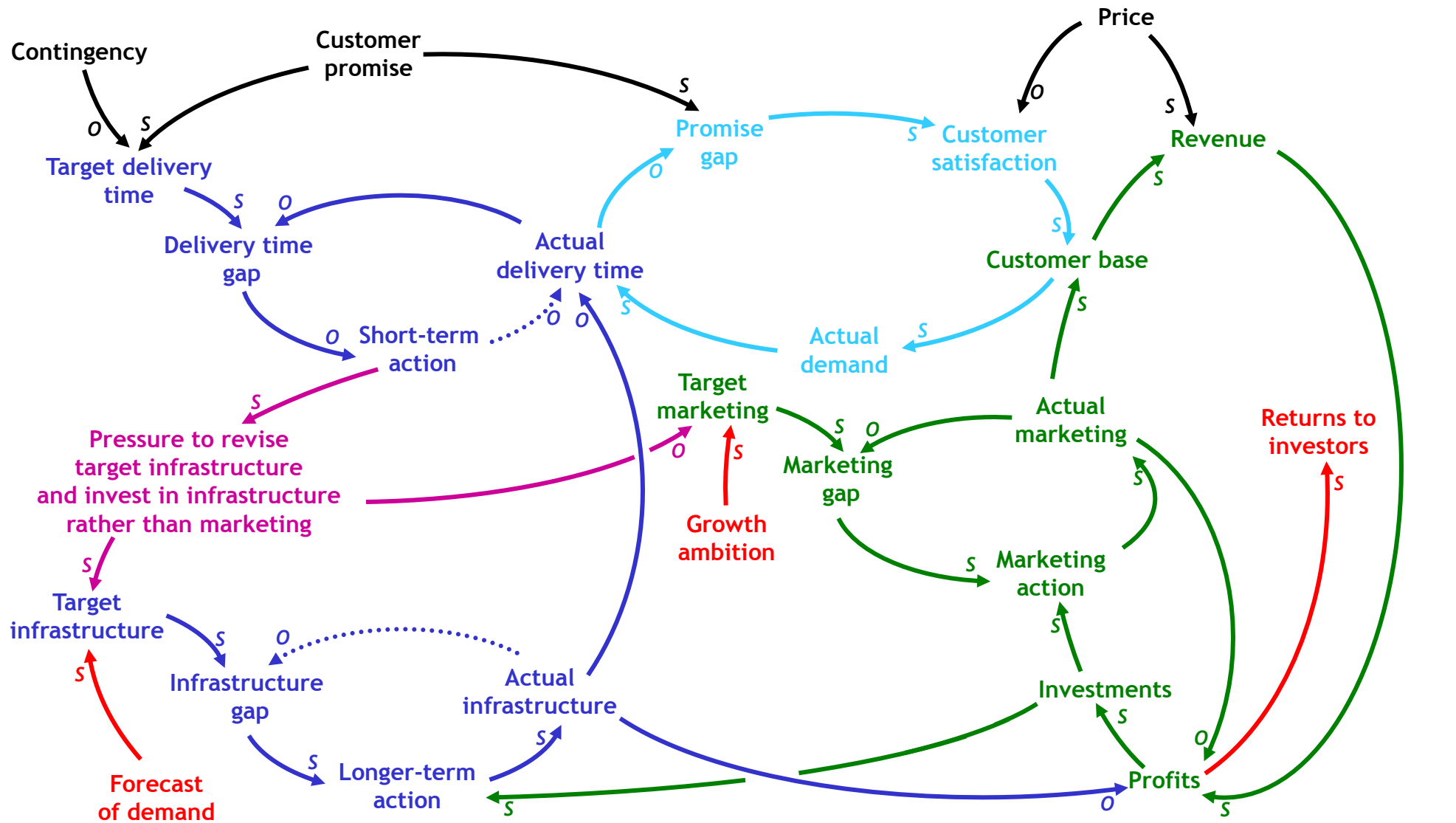
In addition to the links between the green and dark blue loops attributable to the costs of the actual infrastructure and any short-term action required to manage the actual delivery time...

... there is also an additional linkage: a balancing loop, shown in light blue in the upper centre...

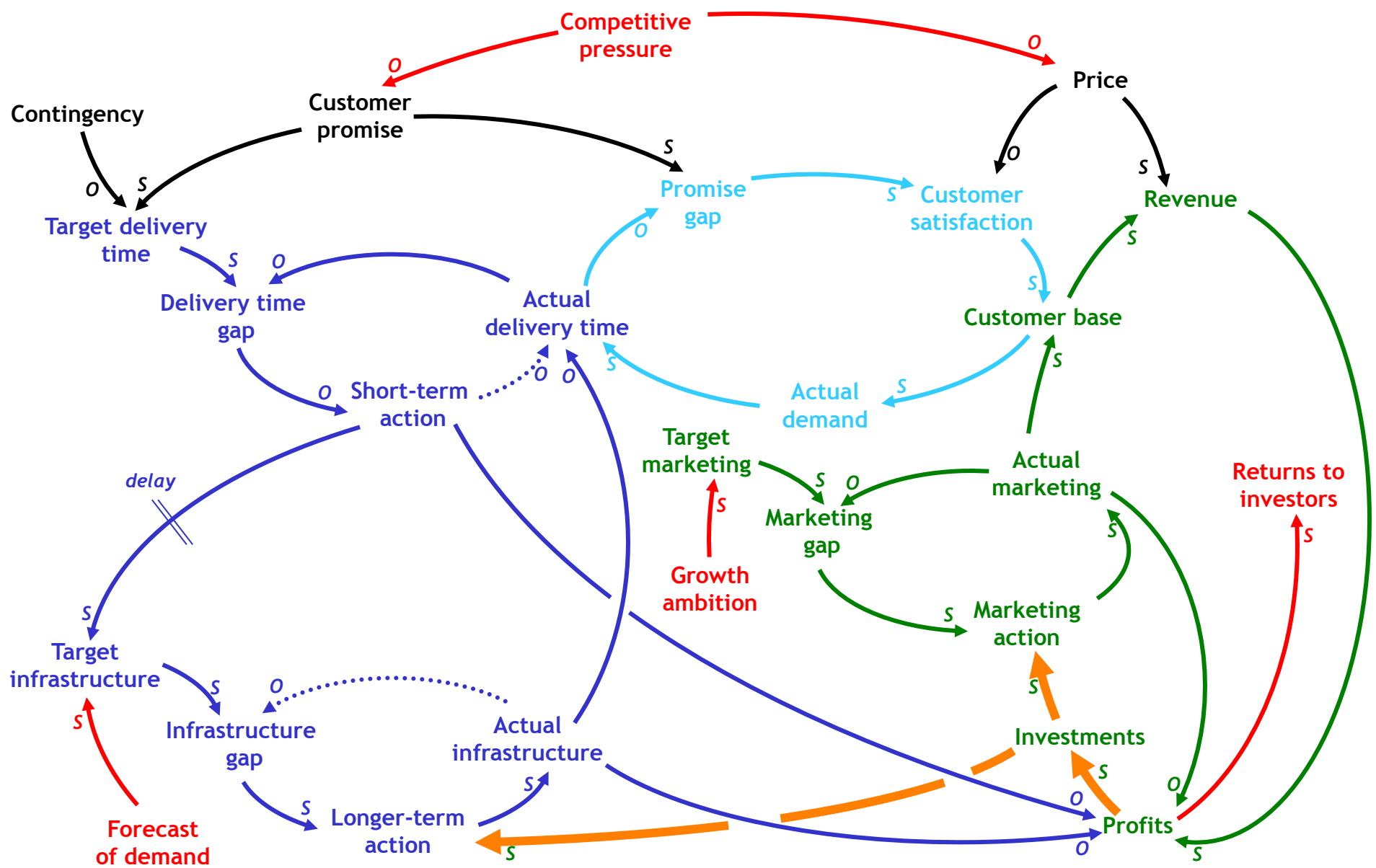
...which acts to arrest the growth of the (green) reinforcing loop: as the customer base grows, the actual delivery time grows too, causing a decrease in customer satisfaction, in essence driving customers away, so choking off growth. This causes one of two behaviours: catastrophic decline in the customer base, as the reinforcing loop flips from exponential growth to exponential decline, or stabilisation around a customer base that will tolerate the actual delivery time. This is bad news, so to avoid it, any increase in the actual delivery time is immediately addressed by short-term action such as overtime...



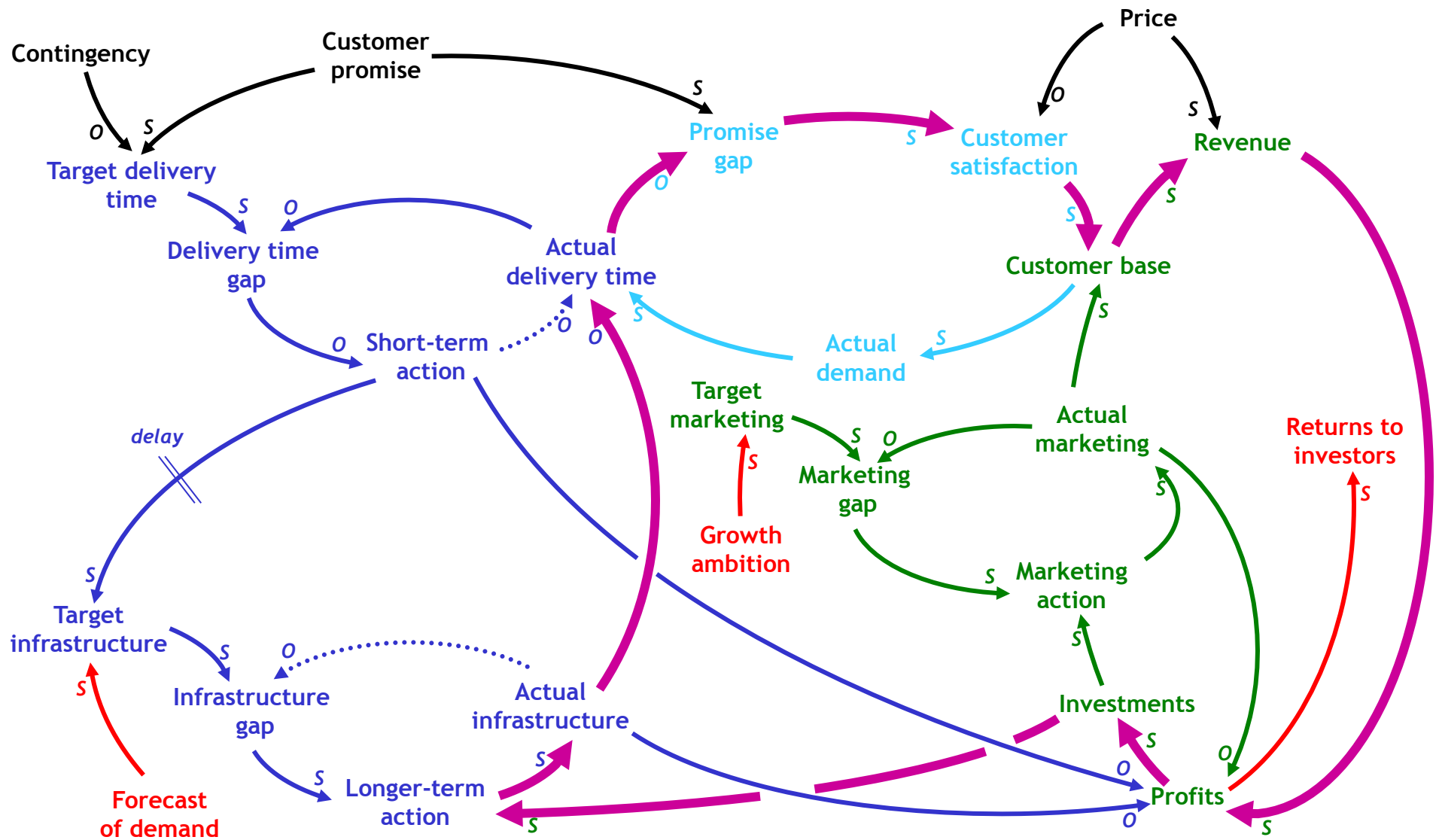
...but sooner or later, *short-term action* such as working overtime no longer solves the delivery time problem. A sustained adverse *delivery time gap* then drives a more radical and fundamental action: the *pressure to revise the target infrastructure*...



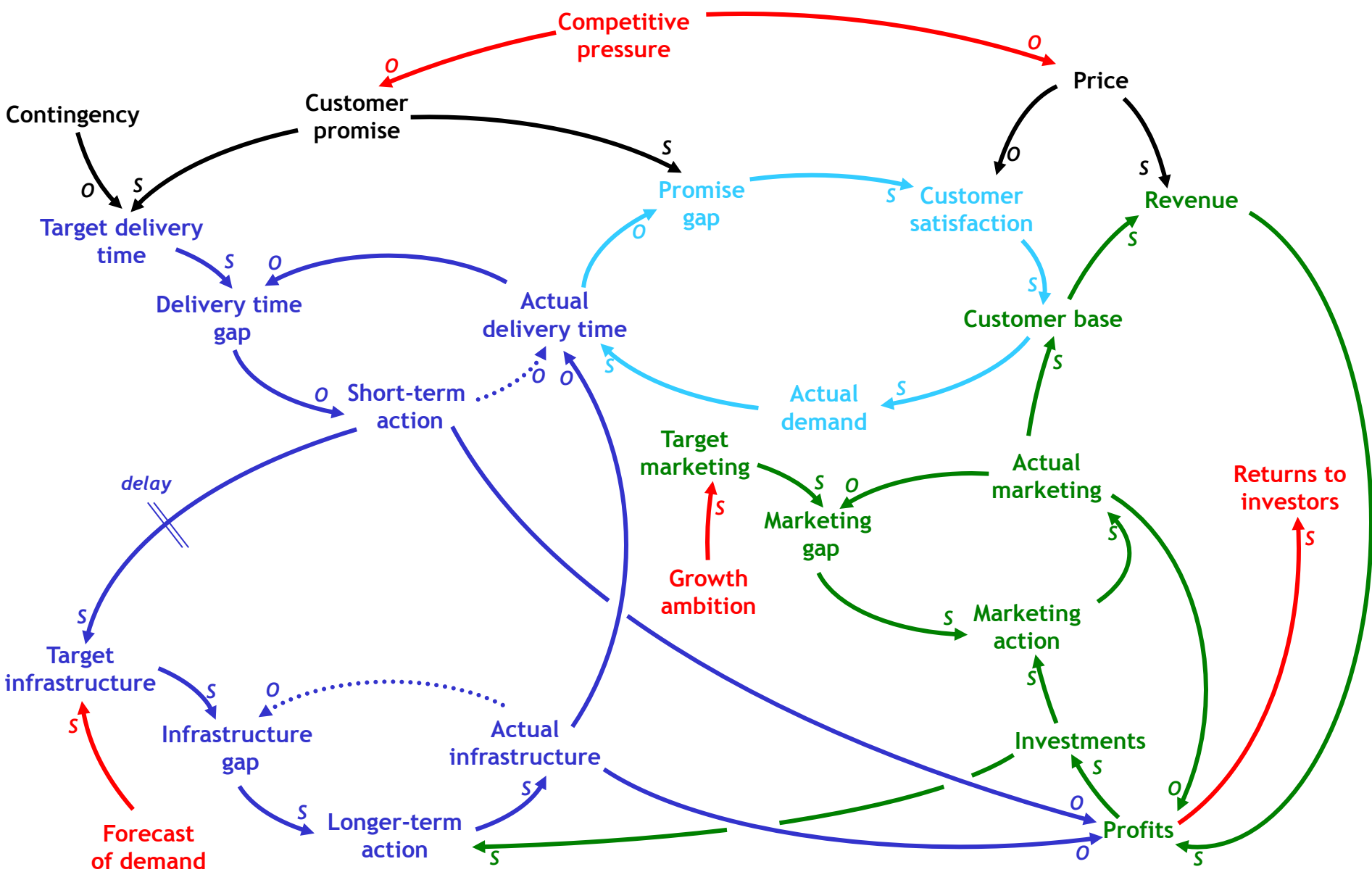
...and to invest in infrastructure rather than marketing.



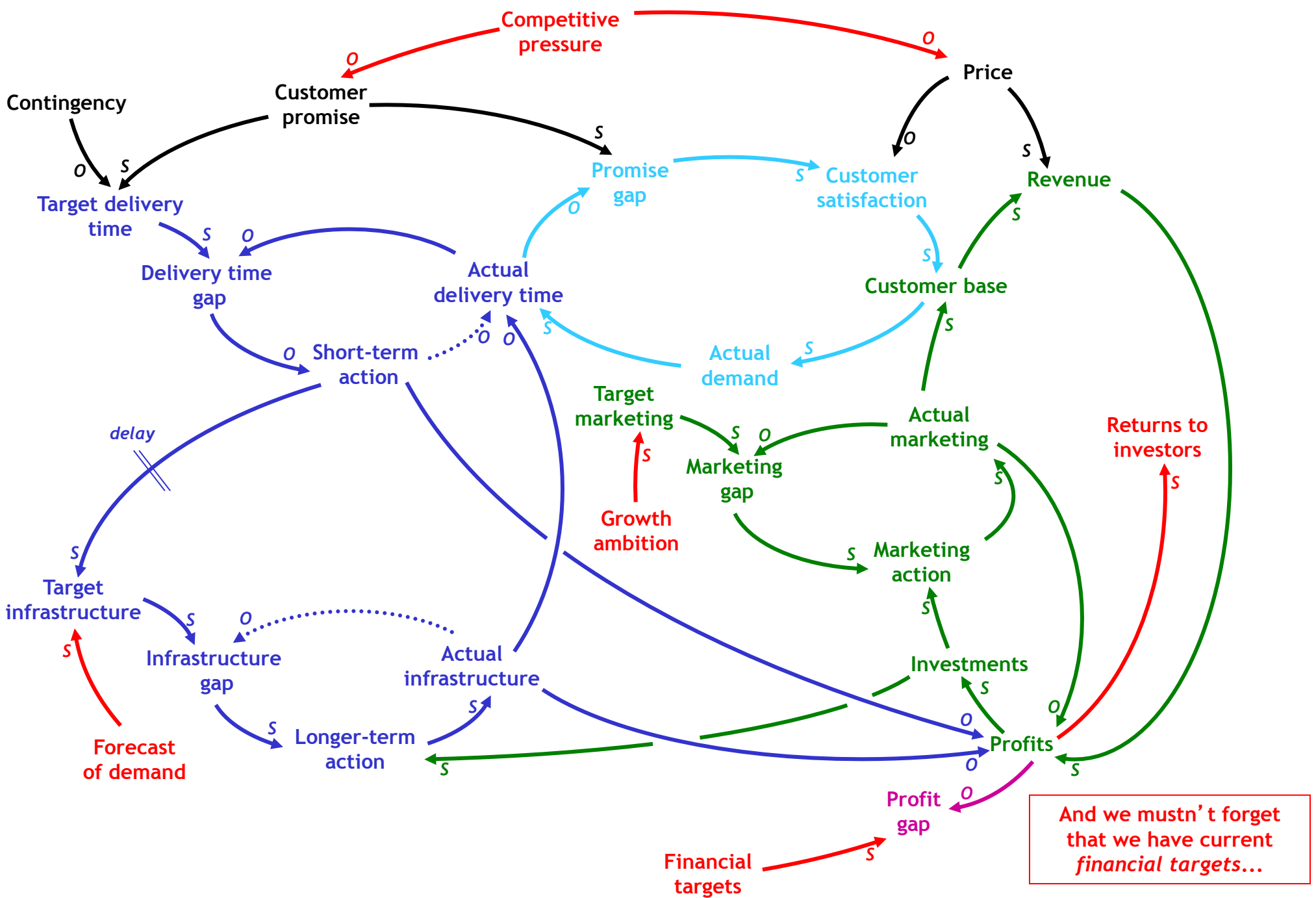
This diagram captures both the short-term and longer-term actions. It shows how the **dark blue** delivery time and infrastructure balancing loops are linked, and that the more fundamental solution to the delivery time problem takes time to implement. It also **highlights** that the key management decision is the allocation of the funds for **investment** between **marketing** and **infrastructure**.



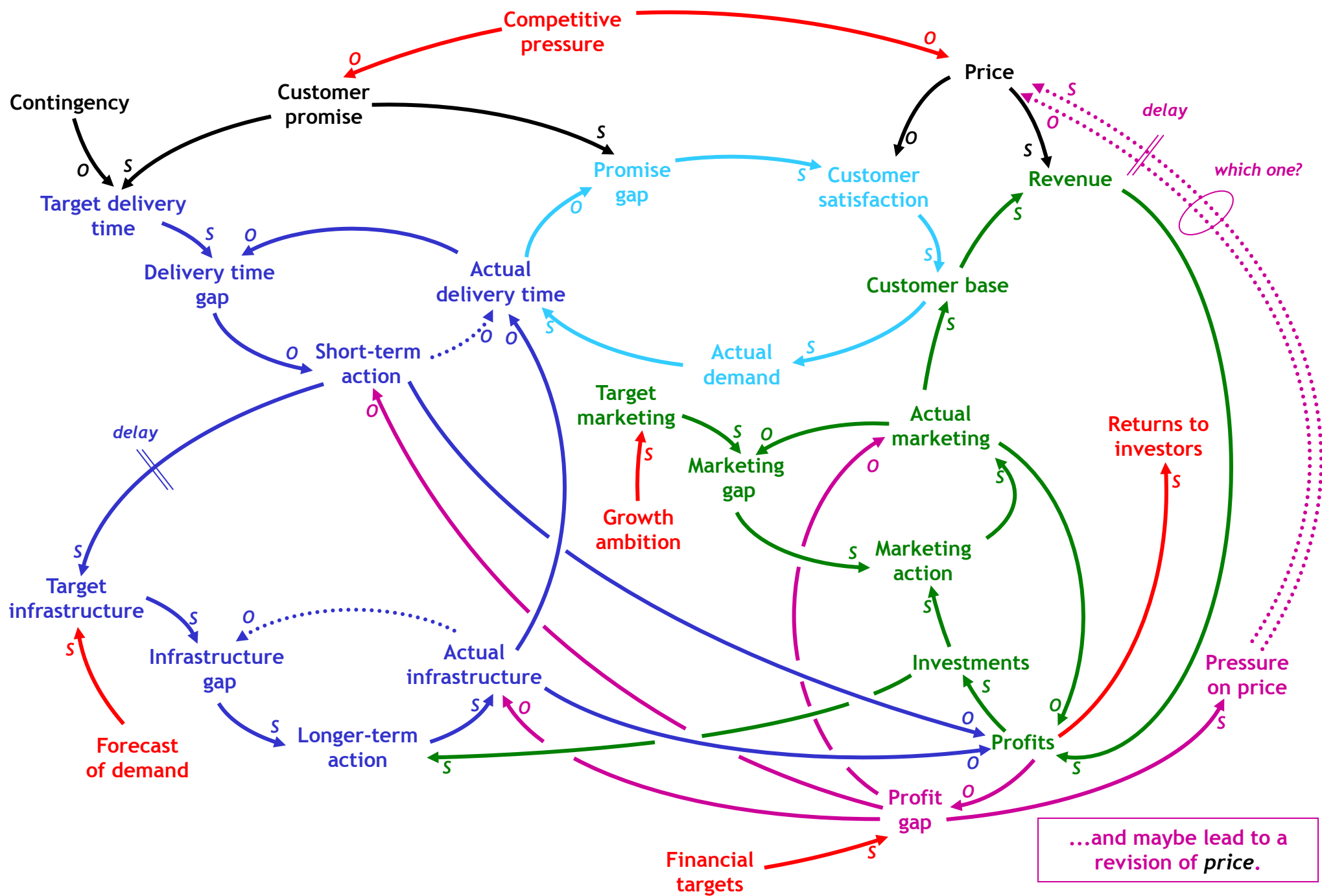
...coupled with a second reinforcing loop representing the steady building of the *actual infrastructure*, so as to keep the *actual delivery time* just ahead of *actual demand*. The simultaneous, and balanced, operation of these two reinforcing loops allows the business to keep on growing - there are now no limiting constraints.



Competitive pressure influences our customer promise, and our price too.



And we mustn't forget that we have current financial targets...



Idea generation,
evaluation and
development

Making innovation
happen

Silver Bullet

Strategy development
and scenario planning

The Silver Bullet Machine Manufacturing Company Limited

Building ultimate competitive advantage

Building
high-performing
teams

Barnsdale Grange, The Avenue, Exton, Rutland LE15 8AH
E-mail: dennis@silverbulletmachine.com
Website: www.silverbulletmachine.com
Mobile and messages: 07715-047947
Telephone: 01572-813690

Training and
knowledge transfer

Conferences

Business and
market modelling