
A general strategic model

A systems thinking approach to strategic planning by the
Silver Bullet Machine Manufacturing Company Limited

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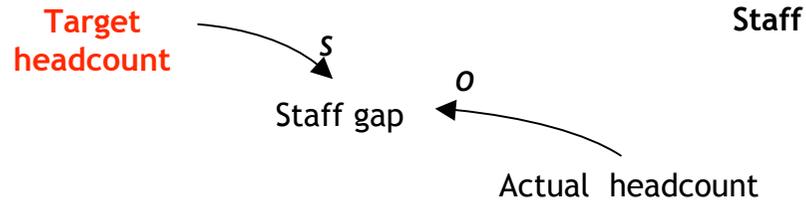
What this document is about

An important component of Silver Bullet's approach to business planning is the use of systems thinking, and system dynamics computer modelling, to define how:-

- a business's set of **levers**, representing the decisions that can be taken (such as the staff establishment, the assets, the product range, the chosen markets...) are linked to
- the desired **outcomes**, representing results such as turnover, profitability, return to investors, market share and so on.

This document describes, in generic terms, how this can be done - the details, of course, will be specific to any given business. This document makes extensive use of **causal loop diagrams**, which show cause-and-effect relationships, as expressed in terms of feedback loops. These diagrams are succinct representations of our **mental models** - our basic beliefs about how the world works. These are inherently personal, but they can - and should - be shared. The diagrams shown here represent Silver Bullet's collective mental models, which might be different from yours! If your mental models are different from those shown here, that is a good basis for a debate; if your mental models are similar, then we are thinking along the same lines, so maybe the ideas described here will work well for you.

An important lever - staff



In causal loop diagrams:-

- The symbol **S** indicates that the variables at each end of the arrow move in the **s**ame direction, so, as the magnitude of the variable at the arrow tail **i**ncreases, the magnitude of the variable at the arrow head **i**ncreases also.
- The symbol **O** indicates that the variables at each end of the arrow move in **o**pposite directions, so, as the magnitude of the variable at the arrow tail **i**ncreases, the magnitude of the variable at the arrow head **d**ecreases.

In this example, by definition

$$\text{Staff gap} = \text{Target headcount} - \text{Actual headcount}$$

For any given **Actual headcount**, the greater the **Target headcount**, the greater the **Staff gap** - hence the **S**.
For any given **Target headcount**, the greater the **Actual headcount**, the lesser the **Staff gap** - hence the **O**.

The starting point - strategy and levers

The job of management is to take actions, actions based on decisions. Some of these actions are short-term, and are designed to ensure that our business's operations are well-executed; other actions are longer term, and represent the implementation of strategic decisions.

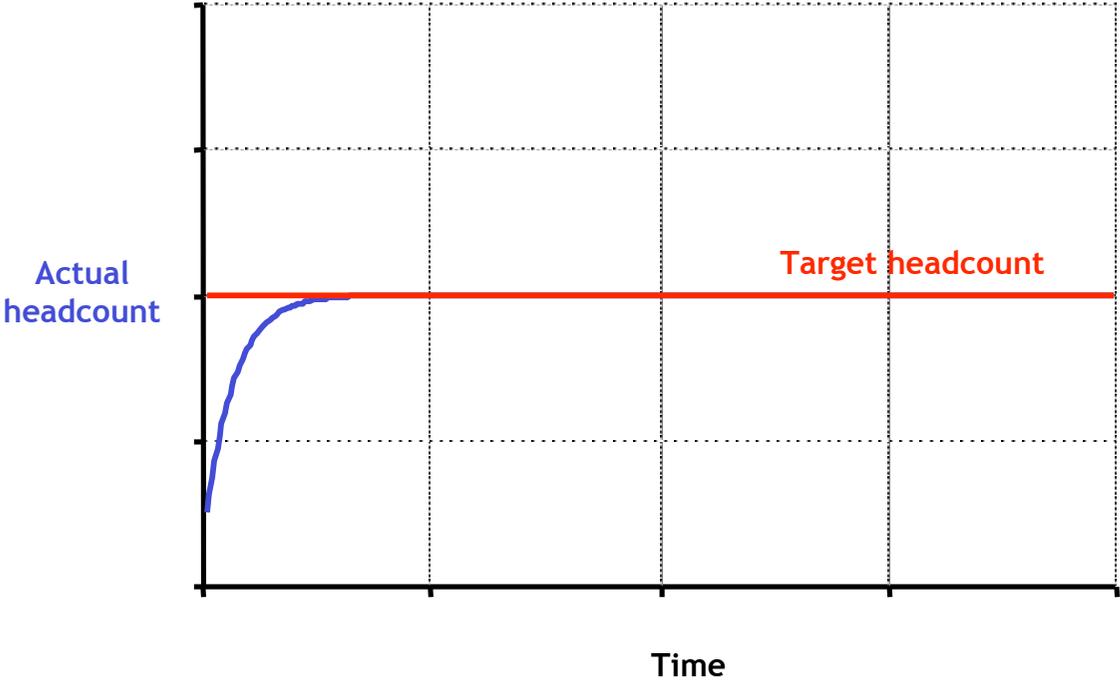
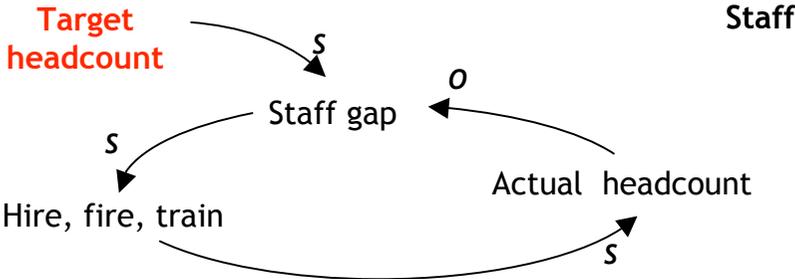
At Organica, the definition of strategy that we use is:-

a shared commitment to act towards a compelling goal.

This shared commitment leads to the agreement of a set of actions, and these actions manifest themselves in the re-setting of a variety of **levers** - levers representing, for example, the types of investment we have in various assets, such as business entities as a whole, or staff, or plant and equipment, or marketing activities, and the rest.

One example of a lever is the staff establishment, as represented by the headcount, as well as the investment in training. At any time, we have an **actual headcount**, and the results of our strategy discussions might be a decision to migrate this towards a different **target headcount**. This therefore gives rise to a **staff gap**, this being the difference between the target and the actual.

Pulling the lever



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What happens when the lever is pulled?

What action do we take when there is a gap between our target staff establishment, and our actual staff establishment?

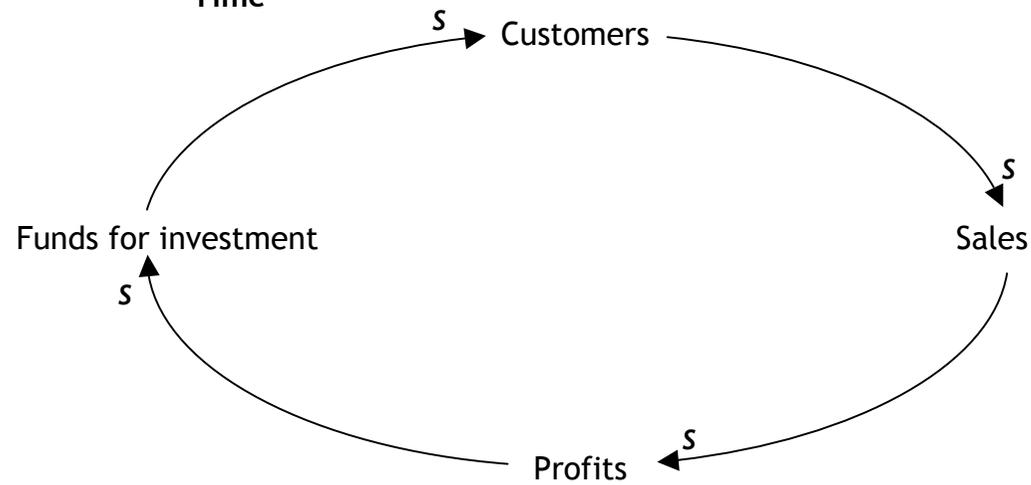
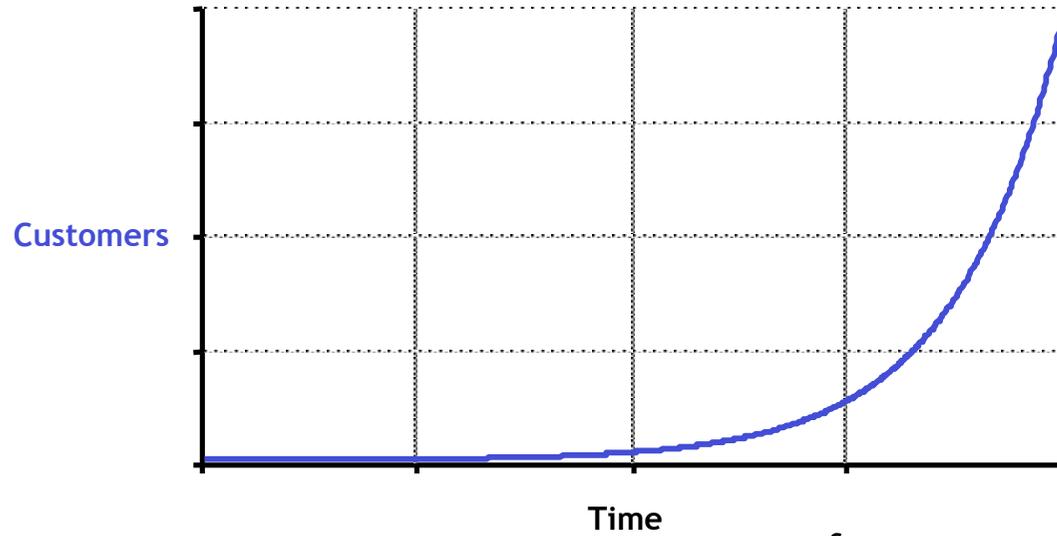
The action in general manifests itself as **Hiring, firing or training**, and the greater the gap, the more energy and urgency we put into this action - hence the **S** linking **Staff gap** to **Hire, fire, train**.

Likewise, the greater the effectiveness of our actions, the greater the impact on the **Actual headcount**, hence the **S** here too.

This diagram constitutes a **balancing**, or **negative feedback**, loop: it describes a process in which our actions are always such as to bring the **Actual headcount** in line with the **Target headcount**. In practice, this may take some time, as there are inevitably some time-lags associated with hiring, firing and training; ultimately, however, the actual will become equal to the target, and the system thereafter maintains itself in this stable state.

This example is in fact representative of all management actions in setting targets, and taking actions to move towards those targets. This leads to the important insight that **all management actions can be represented by this diagram**.

Meanwhile...



The business engine

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Driving the business...

This feedback loop is a generic representation of driving a business.

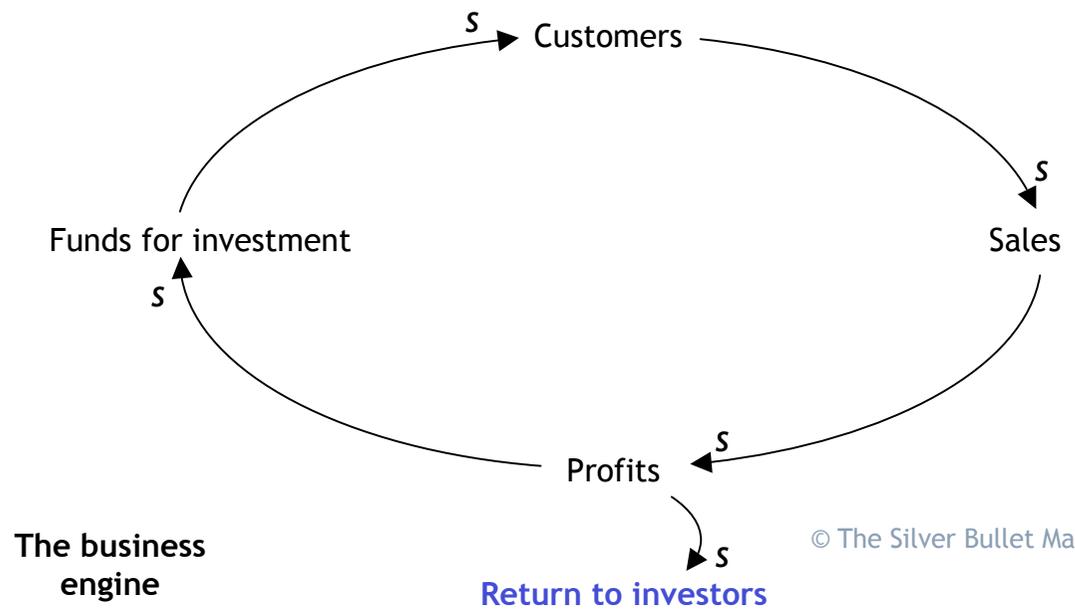
In general, businesses seek to build a **Customer** base by manufacturing a product or providing a service (or elements of both). This then provides a basis for **Sales**, which generate a stream of **Profits** (or losses). These profits are the basis of our **Funds for investment**, the ultimate purpose of which is to build an even stronger **Customer** base.

This is, of course, a (very!) highly simplified picture, and the details of how this actually happens will be specific to any given business. The simplicity of the picture, however, does not deny its fundamental truth, and we can always increase the detail for any specific circumstances when we wish to.

This feedback loop - which contains all *S*'s - is known as a **growth** or **positive feedback** loop. The behaviour of this loop is continuous, exponential, growth - customers generate sales and profits, so providing funds for investment, which can be used to capture more customers, creating more sales and profits...

All businesses seek to drive a growth loop of this type.

...back in the business...



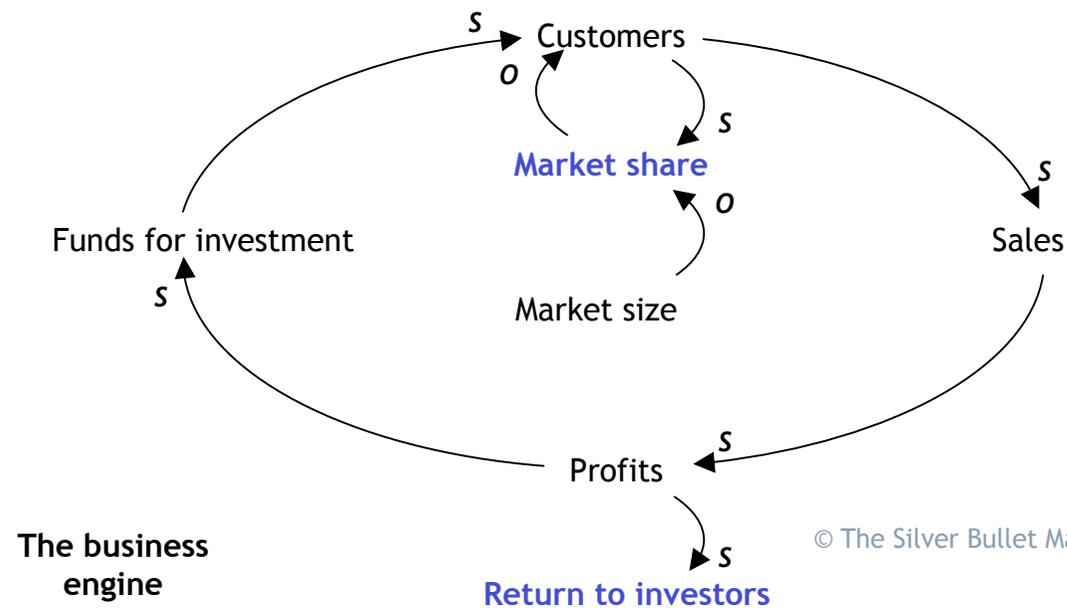
The business engine

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...to achieve desired outcomes...

If this growth loop can be made to spin and spin, then you will achieve the objective of growing not only the [Return to investors...](#)

...our objectives are these

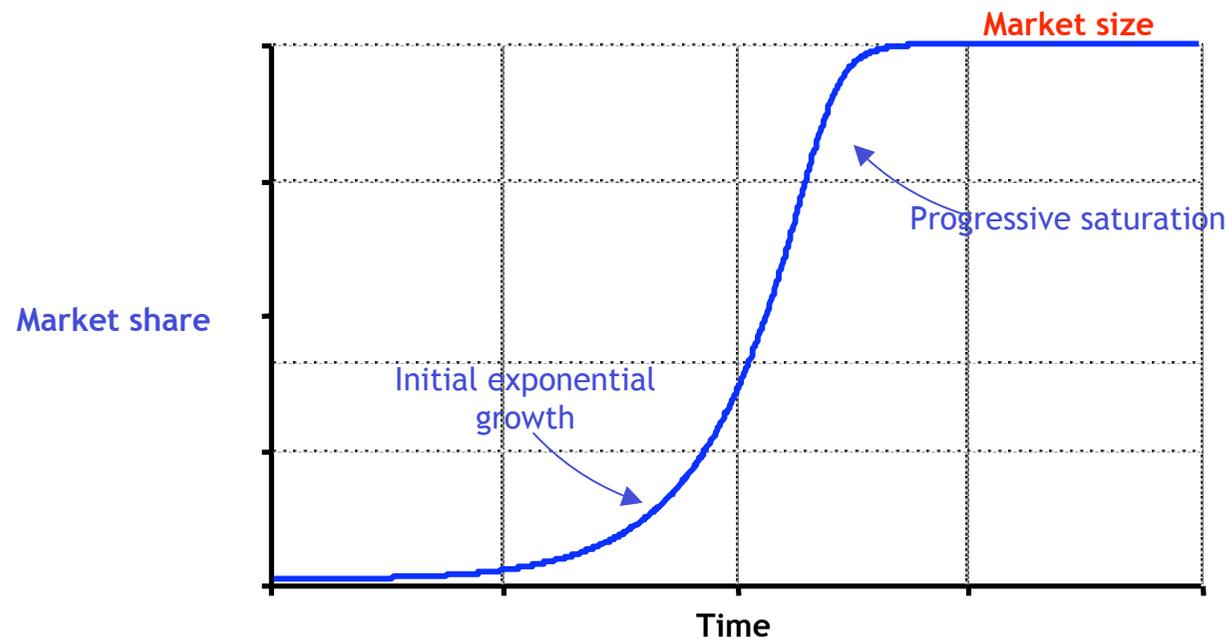


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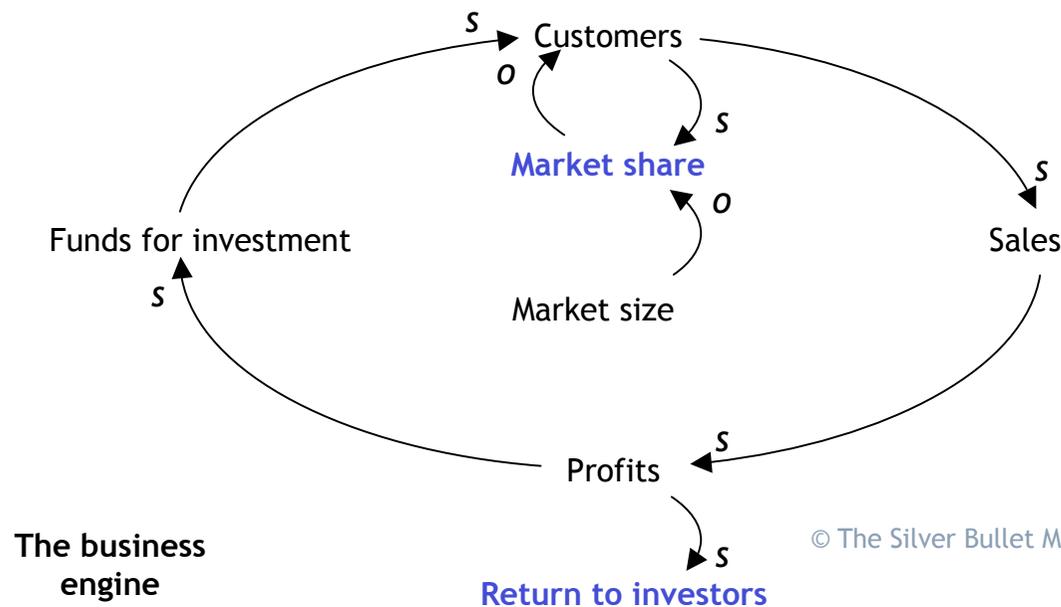
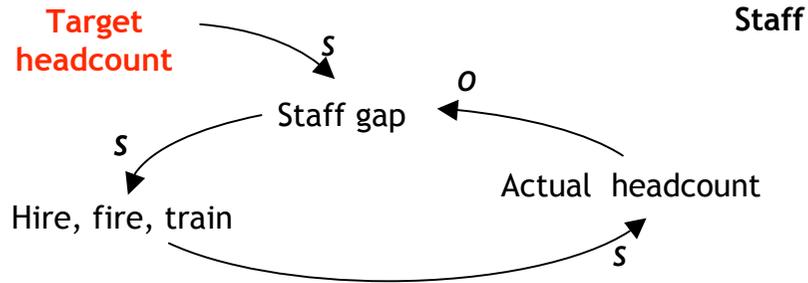
... across the piece

... but also [Market share](#).

At first, when the market share is small, the action of the growth loop is to drive market share exponentially. Most markets, however, have a finite [Market size](#), and as the share of that market increases, sooner or later, it becomes progressively more difficult to attract new customers. This is represented by the link from [Market share](#) back to [Customers](#), with the associated O , so introducing a negative feedback loop, constraining the number of customers to be within the total [Market size](#).



So, how are the two bits linked?



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But there's a big problem

The facing page brings the two diagrams together.

At the top left is the management control loop, where we take action; at the bottom centre, the business growth loop, which achieves the outcomes we desire.

There's a big problem, though: the two diagrams are not connected!

This is, in fact, the diagrammatic representation of a fundamental management truth:

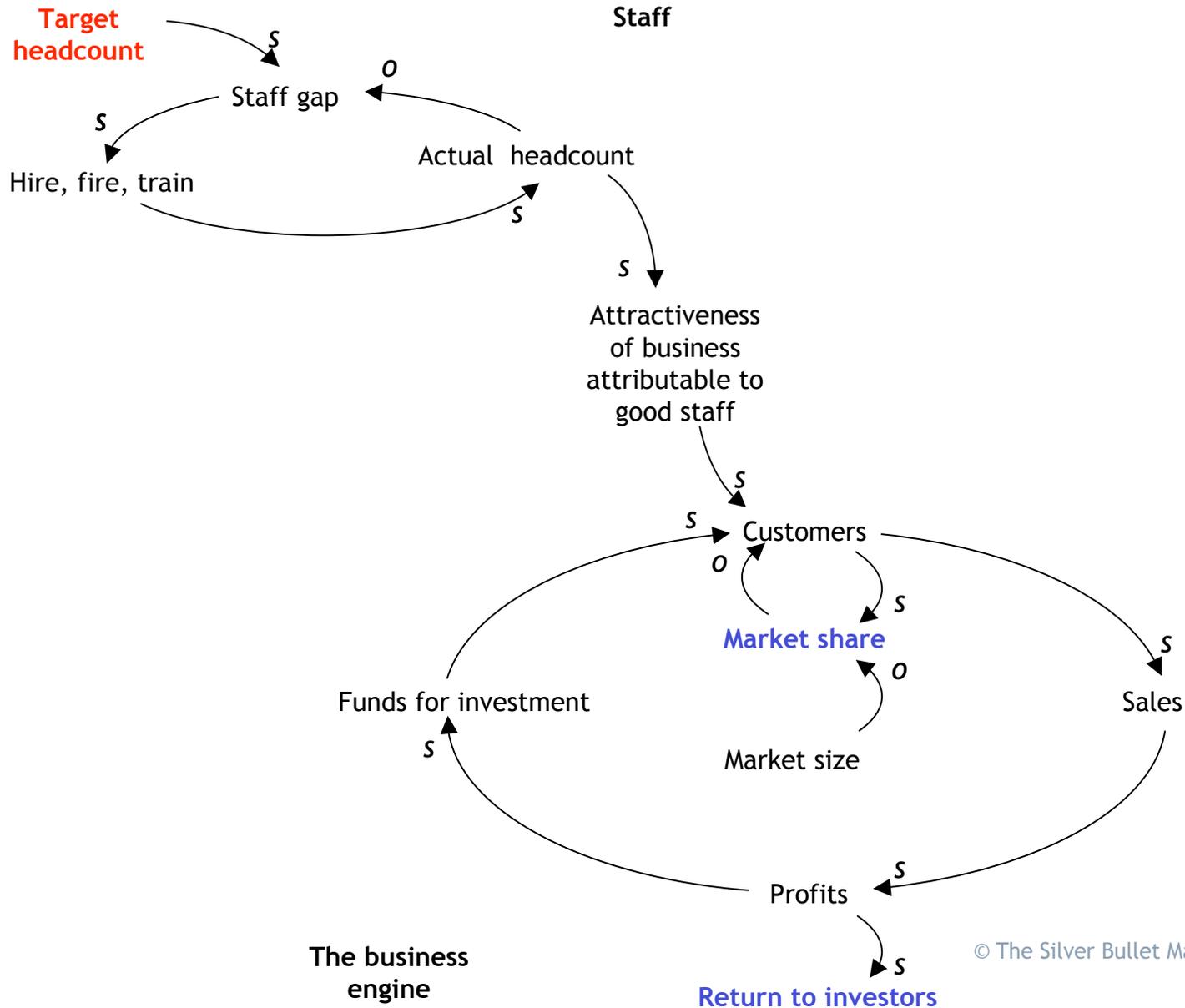
No outcome is connected, directly, to any lever.

Rather, all levers are separated, both in logic and time, from our desired outcomes.

We know, however, that the levers *are* connected to the outcomes, even though these linkages are indirect, and may be associated with time lags.

How, then, can we connect them? How can we better understand how our actions actually deliver the results we want?

Firstly, by this...



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The first link...

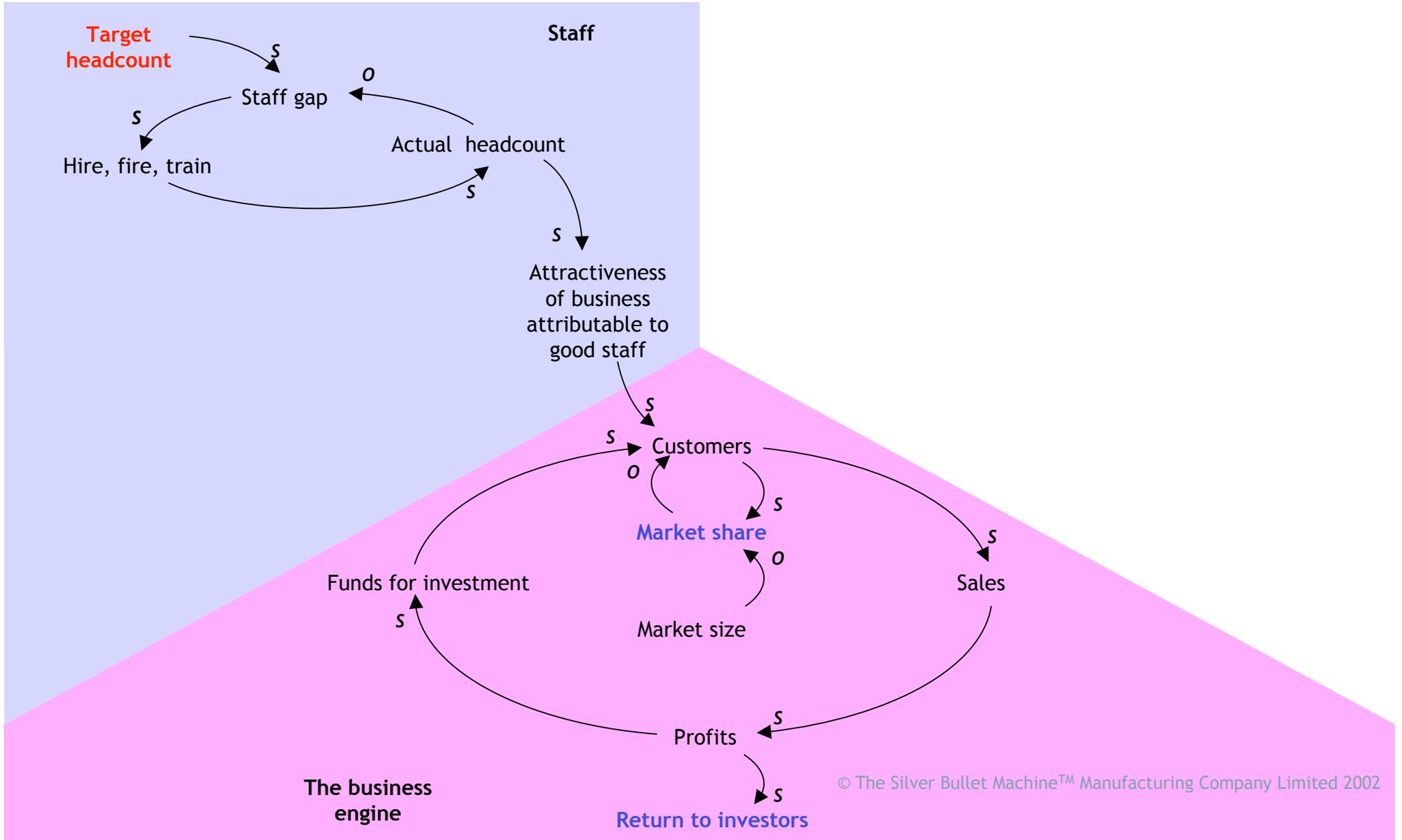
... is shown on the diagram on the facing page. Yes, it's something we can call the **Attractiveness of [our] business attributable to good staff**.

Mmm. That sounds rather strange, doesn't it? And it certainly isn't the kind of item we would see as a row on a spreadsheet. But stop and think for a moment. Why do you want good staff in your business? Is it to do a good job, not to make mistakes? Surely not: merely to do a good job and not to make mistakes is not an end in its own right - the end you seek is to create splendid products and provide excellent service **so that your customers are completely satisfied**. So, maybe the concept of the **Attractiveness of [our] business attributable to good staff** is not so peculiar after all. Maybe it is quite fundamental.

The **Attractiveness of [our] business attributable to good staff** is an example of what in systems thinking is known as a **fuzzy variable**: a variable which is important, but often rather difficult to measure and pin down. But maybe that says more about the weaknesses of our ways of measuring things than about the nature of the variable.

Systems thinking, and the related computer modelling technique known as system dynamics, are both very tolerant of fuzzy variables, and actively encourage them. They are real, and important, and they underlie many of our **mental models**. Systems thinking helps to make these explicit, and to encourage us to understand them more rigorously.

A clearer picture



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Keeping things simple

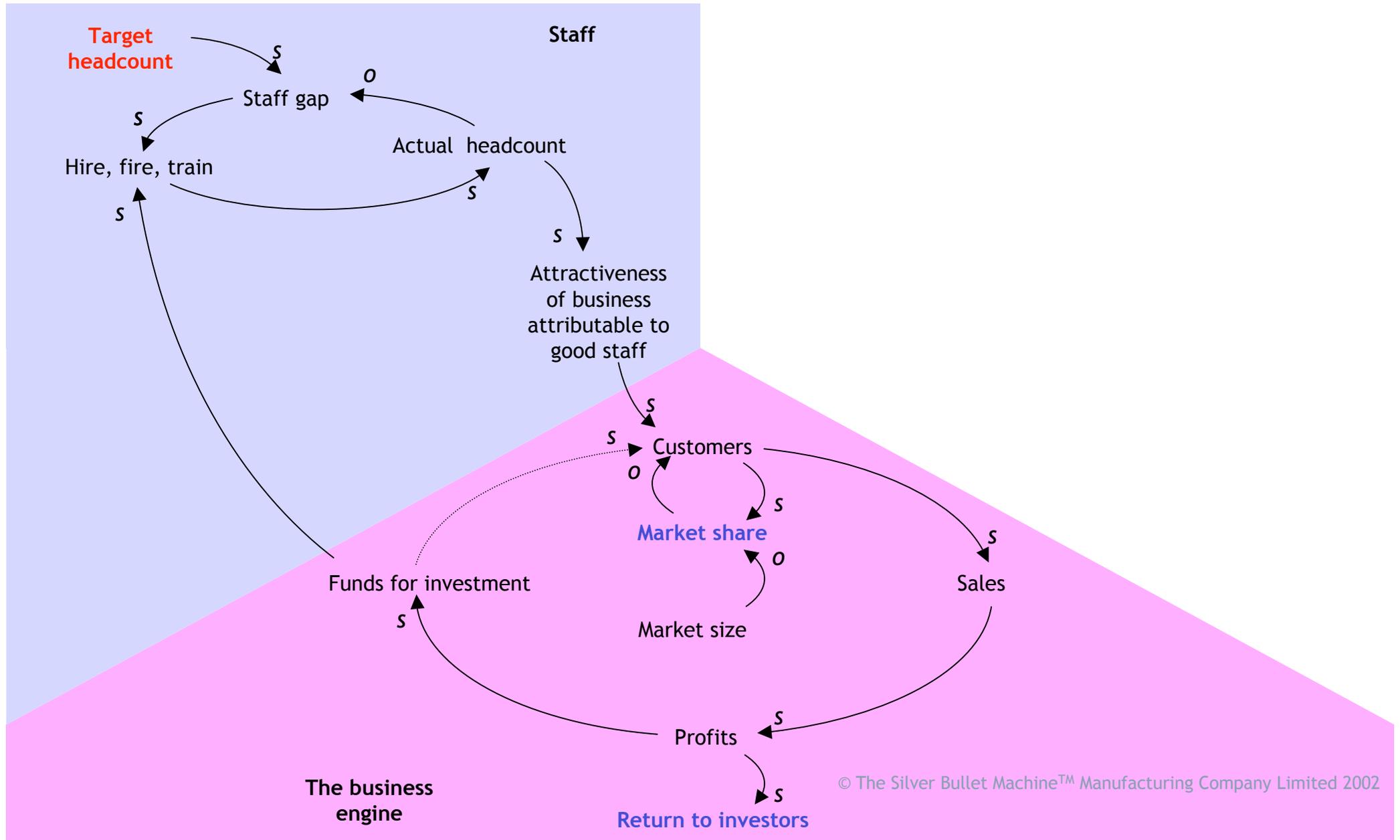
Systems thinking encourages you to keep things as simple as you can, as exemplified by a variable such as the [Attractiveness of \[our\] business attributable to good staff](#). Here are some other examples of similar variables:

- The effect of advertising on sales.
- The effect of maintenance on extending plant reliability.
- The effect of the reward structure on staff morale.
- The effect of staff morale on quality.
- The relative attractiveness of our product compared to the competition's.

Maybe these variables aren't so 'simple': they often encompass enormously important concepts. The apparent 'simplicity' is a consequence of using a single variable; in fact, the use of such variables is highly sophisticated. Also, they reflect reality in a truly profound way: many managerial decisions are taken on the basis of our judgements concerning these very variables. By making them explicit, systems thinking helps people share their mental models, and throws the spotlight on the key areas.

Causal loop diagrams can also become quite complex, even though any one segment may be relatively simple. To help make complex diagrams more intelligible, it is often helpful to use colour, as shown opposite: the blue is for staff, the lilac for the business 'engine'.

...but the money has to come from somewhere...



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...and a second link...

The link represented by the **Attractiveness of [our] business attributable to good staff** isn't the only link between the two parts of the diagram.

A second is the link from **Funds for investment** to **Hire, fire, train**: the money for our action has to come from somewhere!

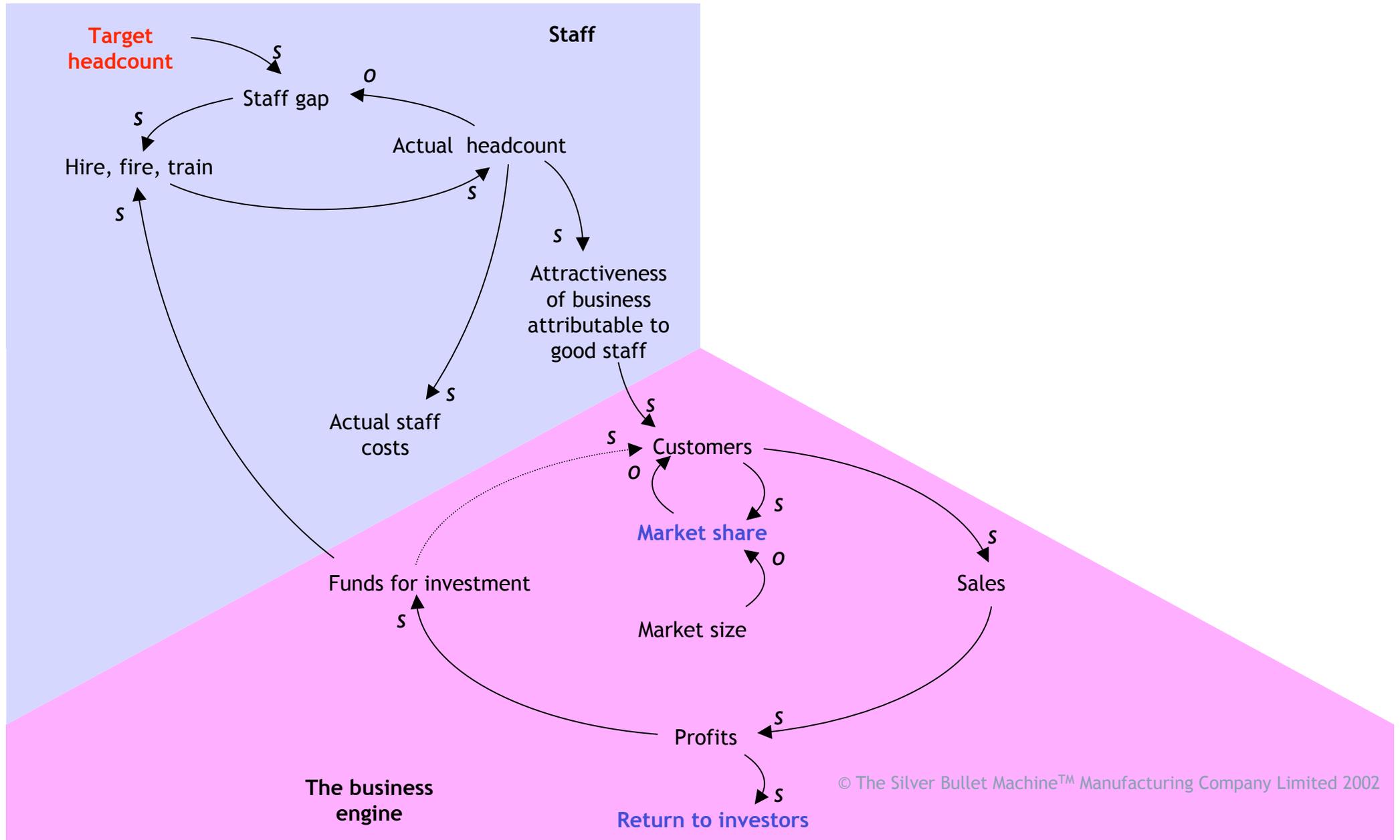
This link, in fact, replaces that from **Funds for investment** to **Customers**, the now-replaced old link being shown by the dotted line.

The logic shown by the diagram now is:

- **Funds for investment** provide the cash for **Hiring, firing and training**.
- This, in turn, enhances the capability of our **Actual headcount**.
- Then, as a consequence of the **Attractiveness of [our] business attributable to good staff**, we attract more **Customers**.
- So generating more **Sales, Profits** and further **Funds for investment**.

The two parts of the picture are now becoming linked...

...and let's not forget the costs...



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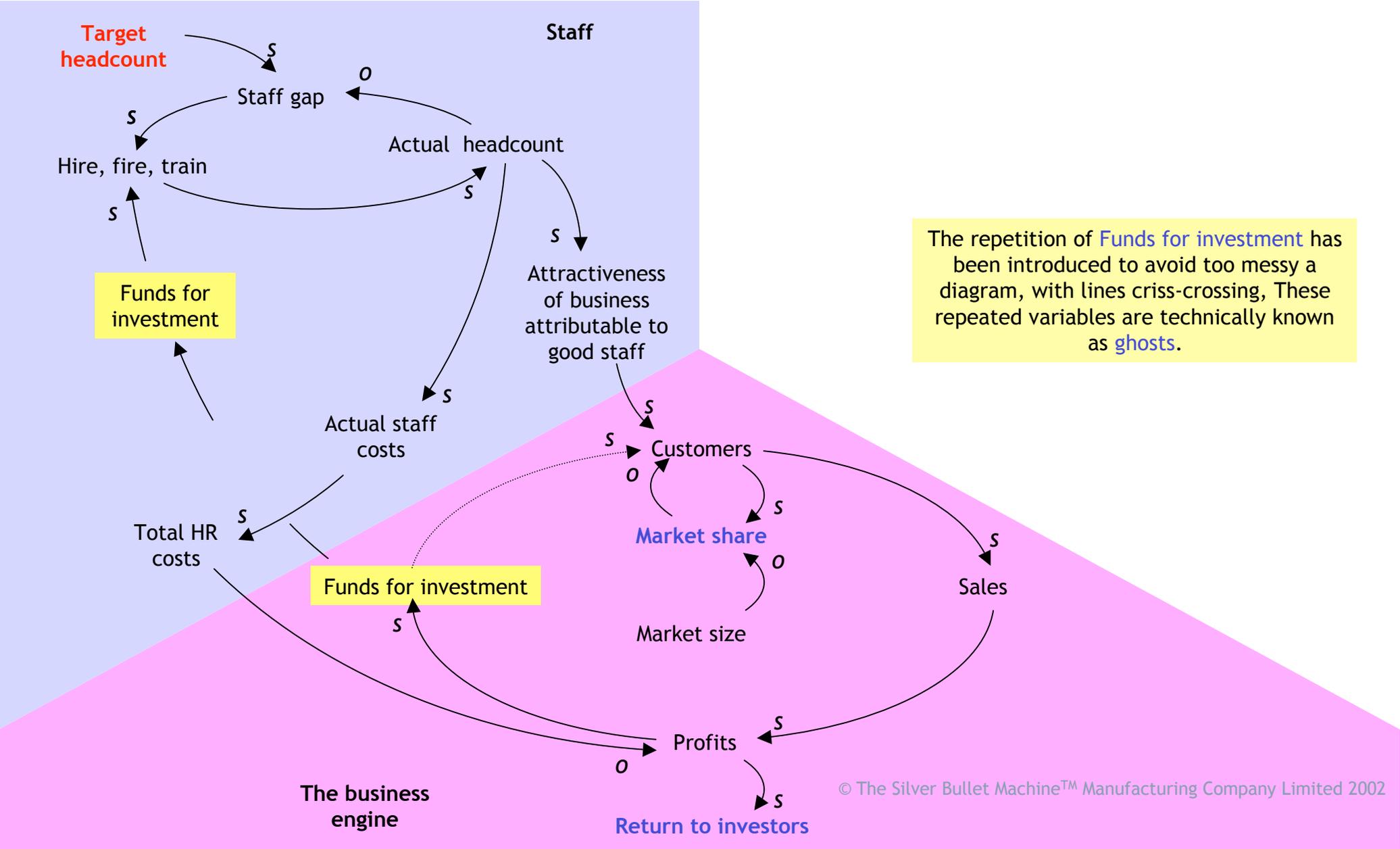
Desired lever settings, determined by strategy

Desired outcomes, the objectives of strategy

...and a third...

The **Actual headcount** is not a free good - we have to pay salaries, benefits, taxes...

...all the costs...



The repetition of **Funds for investment** has been introduced to avoid too messy a diagram, with lines criss-crossing, These repeated variables are technically known as **ghosts**.

...which feeds into Profits...

...all of which contribute to the **Total HR costs**, which itself feeds back into **Profits**.

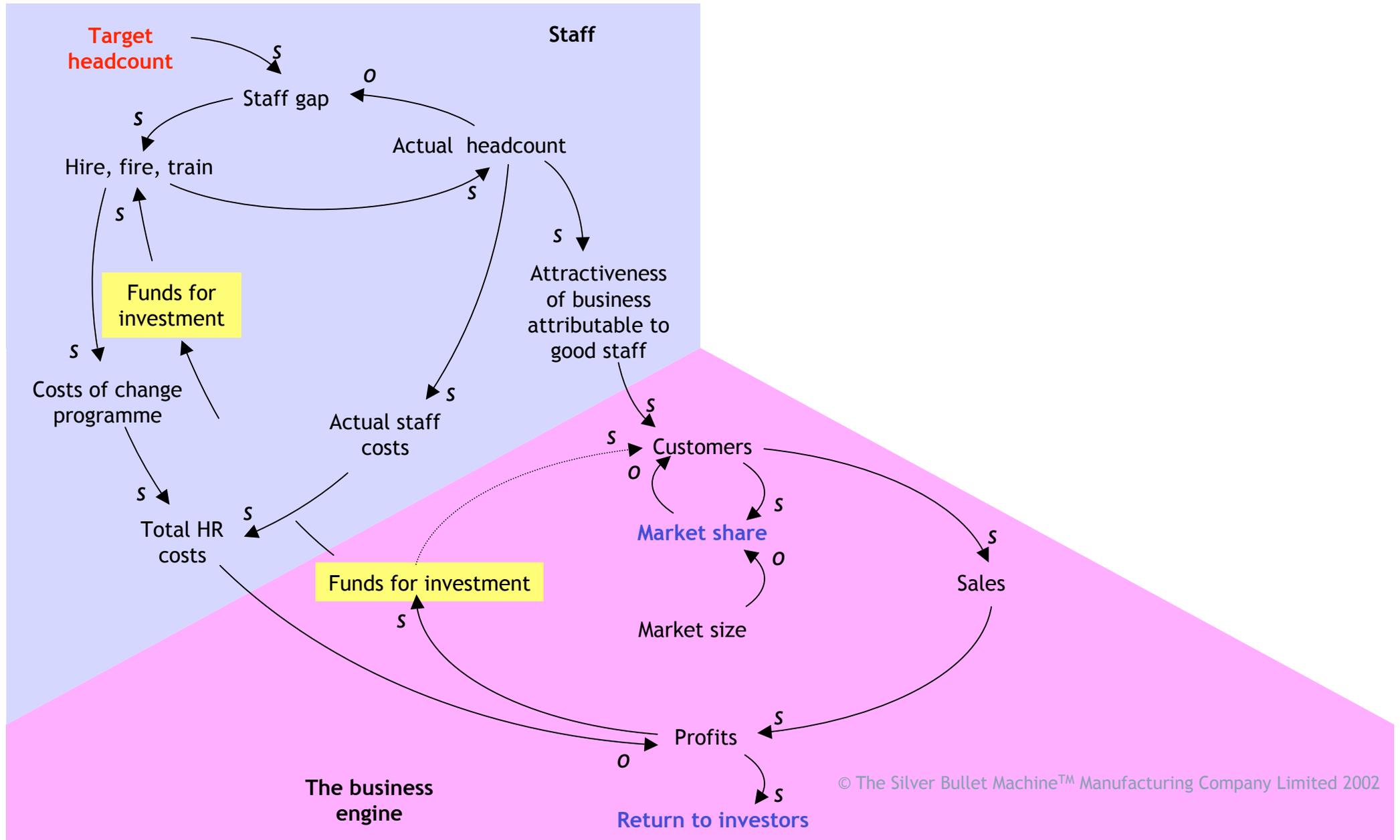
But since, as **Total HR costs** increase, **Profits** decrease, there is an **O**, showing that this is a negative feedback loop.

We now see that linking the two parts of the diagram has done two things: firstly, we have identified the positive feedback loop through **Actual headcount**, which acts to **grow Profits**; at the same time, though, we have identified a negative feedback loop, through the **Total HR costs**, which acts to **deplete Profits**.

These two feedback loops operate **simultaneously** and **in opposing directions**. Whether or not, in the end, **Profits** actually increase or decrease will depend on the specifics of the each situation.

The simultaneous operation of two, counter-acting, feedback loops is very much a feature of real life, and is the recognition within systems thinking that 'there is no such thing as a free lunch'. Systems thinking helps make both loops explicit: something that can easily be overlooked when we are intoxicated by the euphoria of our pet positive loop. The failure to recognise the simultaneous negative loop is the reason why 'quick fixes' can often backfire.

...including the costs of change too



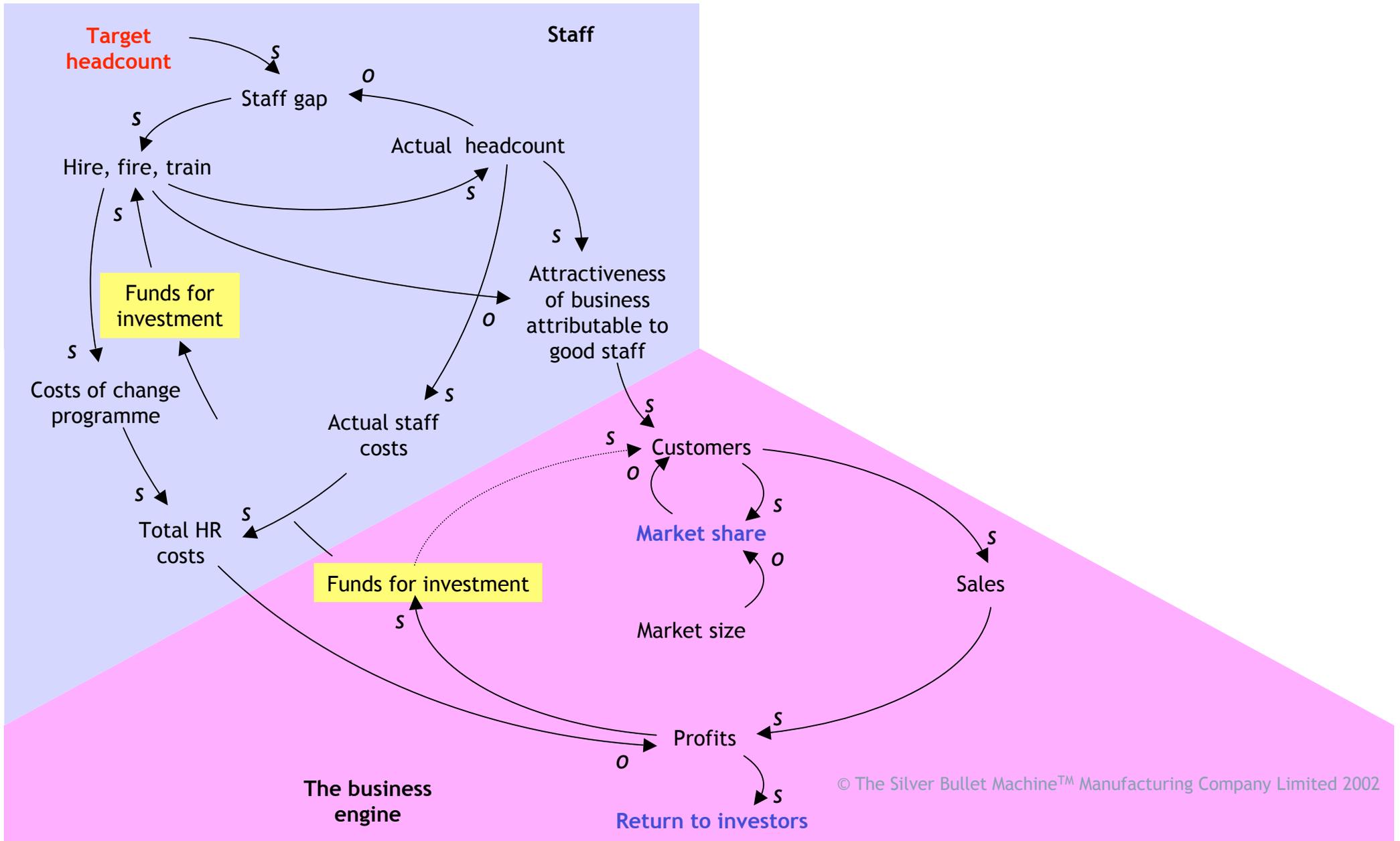
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...and that's not the only one...

The negative feedback loop from **Actual headcount** through **Total HR costs** to **Profits** isn't the only negative feedback loop we need to take into account.

Another recognises that the change programme itself, the act of **Hiring, firing, training**, also costs money, so adding to **Total HR costs** and further depleting **Profits**.

And the change programme itself may not be so easy...



...and another

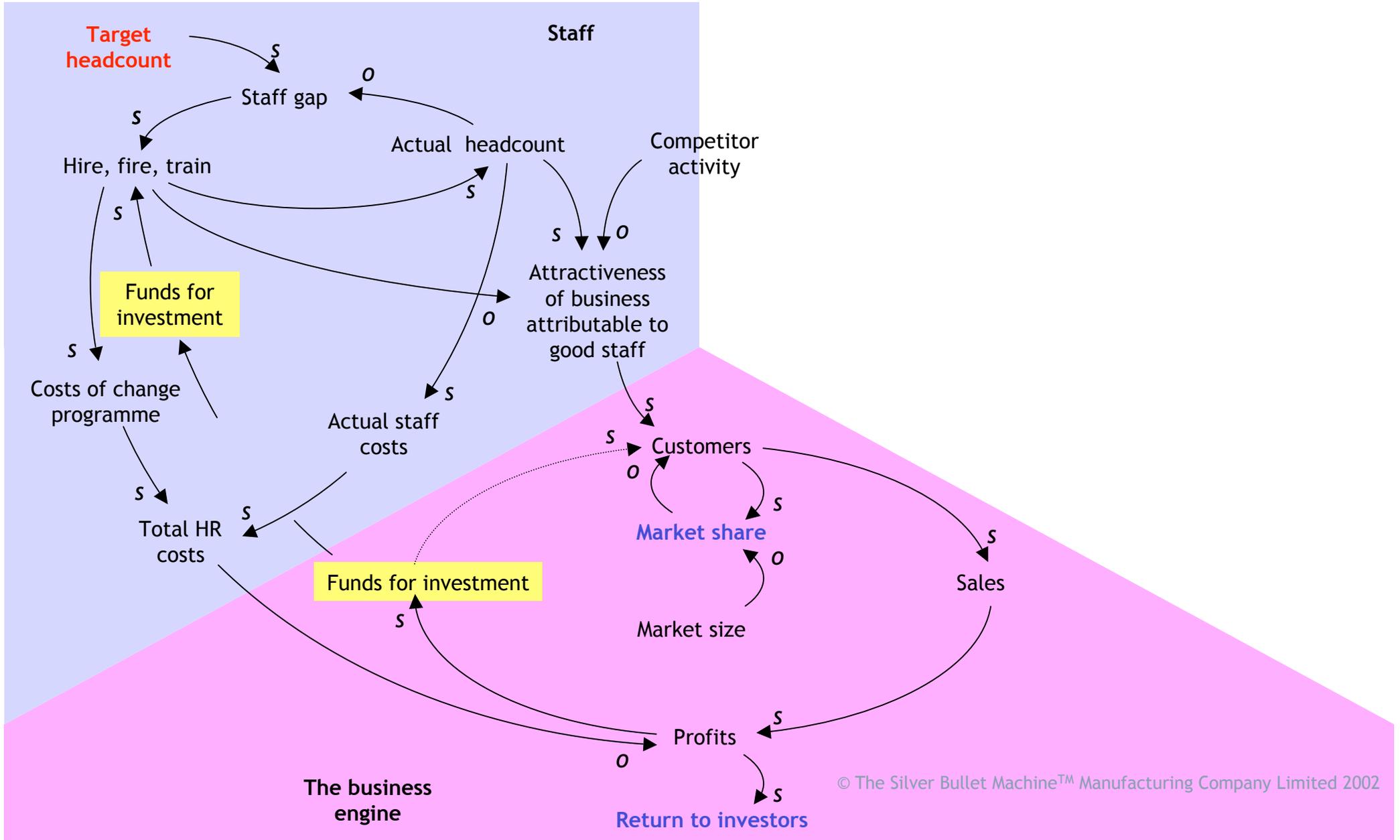
The diagram opposite shows the introduction of a further negative feedback loop, linking **Hire, fire, train** to **Attractiveness of [our] business attributable to good staff**.

What does this mean?

It captures the possibility that a change programme itself might - inadvertently - actually damage the **Attractiveness of [our] business attributable to good staff**. How might this happen? Possibly a retraining exercise might disrupt customer service; perhaps those who perceive themselves as disadvantaged by the programme might be involved in a labour dispute.

Systems thinking encourages you to think of this as a possibility, and this itself raises visibility and might enable such potentially damaging events to be anticipated and managed.

And let's not forget the competitors...



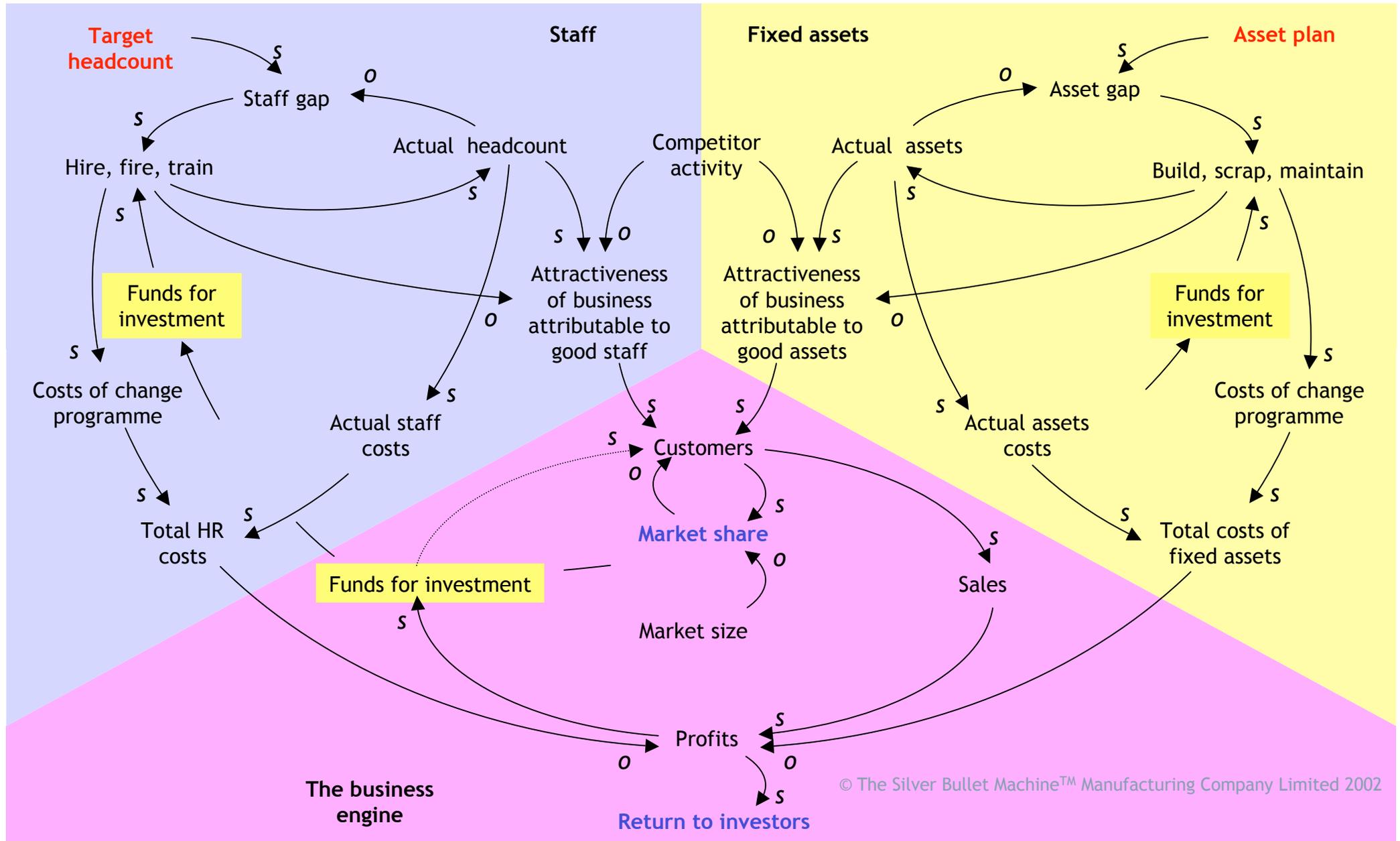
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Meanwhile, what are the competitors doing?

One way of taking into account the action of competitors is to recognise that, amongst other things, competitor activity acts to diminish the [Attractiveness of \[our\] business attributable to good staff](#).

In fact, this is not the only effect of competitor activity, and we'll pick up some others shortly: at present, we are dealing with only one management lever, that concerning staff...

...and the fact that there is more than one lever



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Desired lever settings, determined by strategy

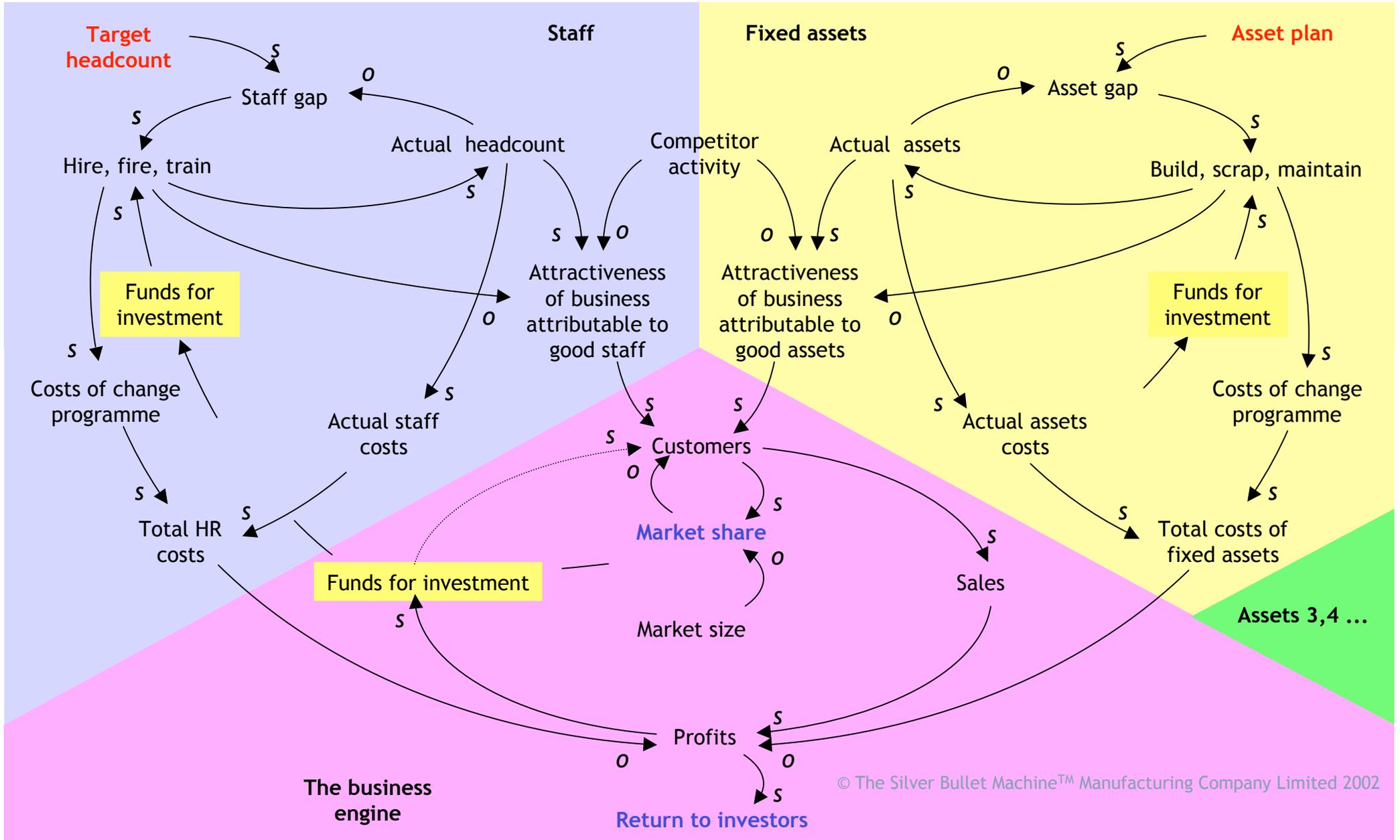
Desired outcomes, the objectives of strategy

What about a second lever?

The diagram on the facing page shows, in the pale yellow zone, the action of a second management lever: the policy decisions associated with the investment in fixed assets.

Generically, this behaves in exactly the same way as the 'staff' lever: the key differences lie in the details of the [Attractiveness of \[our\] business attributable to good assets](#) as opposed to the [Attractiveness of \[our\] business attributable to good staff](#), and in the specifics of the behaviour of the various types of cost.

And so we have a generic strategic model!



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Desired lever settings, determined by strategy

Desired outcomes, the objectives of strategy

And all the others too

All management levers can be treated in exactly the same way!

That leads to a highly structured, modular approach, in which the complexity of quantified strategic planning is well and truly tamed. This also addresses the issue of many of the main ways in which competitor activity takes place.

We have solved the problem of how to connect the levers to the outcomes, of how to understand to true dynamics of our business.

For further reading

This model is further developed in *Seeing the forest for the trees - a manager's guide to applying systems thinking* by Dennis Sherwood, published by Nicholas Brealey Publishing (2002).

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