

1. **Socio-technical systems: There's more to performance than new technology**

1.1. **Summary**

The Socio-technical systems approach (STS) provides significant insights into the complex dynamic of performance in an organisation. The interrelationships between people and technology mean that it is not a matter of simply installing new technology to solve apparent performance problems.

STS is a diagnostic tool to uncover the causal chain of events that drives performance so that investment in technology is supported by changes in the surrounding organisational processes and people. STS supports the alignment of people and technology and needs to be used in conjunction with user interface design and the IT Blueprint to ensure the right technology is put in place.

1.2. **What is socio-technical systems theory?**

The Socio-technical Systems (STS) theory considers that every organisation is made up of people (the social system) using tools, techniques and knowledge (the technical system) to produce goods and services valued by customers (who are part of the organisation's external environment).

How well the social and technical systems are designed, with respect to another and with respect to the demands of the external system, determines to a large extent how effective the organisation will be. The concept of the socio-technical system was established to emphasise the two-way relationship between people and machines. Its role is to foster the program of shaping both the technical and the social conditions of work in such a way that efficiency and humanity would not contradict each other any longer.

1.3. Understanding your organisation, its performance and the use of technology

We often see management take the view that simply putting in a new piece of technology will solve the observed performance problems. But performance is much more complicated than that. There are many different reasons for why things are the way they are. Using the STS framework as an analytical tool will help identify the root causes of performance.

Consider these examples:

A financial services institution uses several different applications to complete an end-to-end customer process. You find that the sales team aren't cross-selling or giving leads to other parts of the organisation.

You take a closer look at the IT systems and discover there isn't a good leads management function available to them. Your first reaction might be to build a better CRM application that manages leads in a more effective way.

However, the situation is more complex than this. Because you didn't examine how people are working, you wouldn't have discovered that the performance management system does not include KPIs for the number and quality of leads. It turns out that people are paid only on their own sales, not on helping others (i.e. on group sales performance). Getting more leads requires a change to the performance management system.

In another case, a services organisation has a call centre in place that handles several thousand calls per day. Performance analysis shows that call volume increases on a monthly basis. The IT system is pretty old, so you know it's probably time to replace it with a newer, faster one. You'll probably initially need the same number of staff, with a view to reducing staff in the future. You notice that turnover in the call centre is higher than the national average, but don't think much of it.

However, taking a wider look at the overall performance, you might discover:

- ◀ *People are remunerated on call volume. There is no incentive in place for quality handling, or single call resolution.*
- ◀ *The call centre manager is known as a tyrant and people hate working for him. He prefers a micro-management style and encourages handling calls as quickly as possible.*
- ◀ *You investigate why people are calling and find that they are all calling about the same product. It seems that there is a flaw in its operation and people are calling for repairs, replacements or refunds.*

Improving performance is now a matter of changing the remuneration package, counselling or replacing the call centre manager, and addressing product quality issues.

Finally, at your airline's check-in counters, you see the queues getting longer and longer. Examining the system performance reports, it seems that the average time to complete a check-in is 3 minutes from the time the customer record is opened to issuing a boarding pass. You also notice that staff are making many key strokes, also adding to the total time to process a customer. It's clear that new software is required and a faster server.

However, if you went down to the counters to observe a sample of customer interactions, you discover that the staff are chatting and being friendly to customers. That's OK, you think to yourself, customers like to be treated as a person. It turns out that the initial strategy of differentiating on service with a smile is not now what customers want. Flights are cheap and have become a commodity – no different, really, to getting on a bus around the city. The actual solution requires changing the way customers are handled, from friendly and chatty to polite and efficient. Customers now want to be processed quickly, instead of standing in queue grumbling to others about how inefficient things are at the counter. Consider the last time you saw a queue on a bus where the driver chatted with every passenger as they got on the bus – can you imagine the bank-up of busses?

From the above three examples, you can see that observed performance is a function of many different causes – some clear, some obscured by a focus on symptoms. If all that changed in the above organisations was new technology, we would very likely see more of what they already had. The new technology may have a small impact, regardless of the surrounding circumstances. But to get large performance gains, the entire organisational system must be analysed to understand the causal change of events.

1.4. Limitations of the STS approach

There is no doubt that STS provides significant clarity in understanding what drives performance in the organisation and the complex dynamic between people and technology.

It can identify what needs to be changed, and with the right statistical data, you can make assertions about the expected performance improvement. It provides clear advice on organisational change, such as changes in people and processes, but it does not tell you how to design the technology to support performance. Therefore, if you identify a number of change initiatives and one of them relates to new technology, it will not tell you what and how the technology needs to work to drive performance.

The user interface of the technology and its relationship to people's workflows and activities is critical. We all see the problems when technology is bought and implemented that people simply cannot use, or it slows down performance so much that it destroys the expected performance improvements. And we all know that between 50-80% of all IT projects fail to deliver on the planned ROI.

1.5. High level steps in performing a STS analysis

The process of STS analysis is the first step in undertaking organisational diagnosis and change. Change can range from new products, new technology, new people, different training and / or new performance management systems.

When performing an STS analysis, the following questions can be asked of stakeholders and workers:

- ◀ What aspects of the social system do people wish to change or leave behind?
- ◀ What aspects of the social system do people wish to retain or strengthen?
- ◀ What aspects of the social system should be created which do not currently exist?

- ◀ To what extent does the management support the new changes? Is this support adequate?
- ◀ What are the norms governing interactions among groups of people in this organisation (supervisor-worker, co-workers, skilled-unskilled workers, etc)
- ◀ What do new staff need to know to perform well in the organisation? Is this support and information provided in an appropriate and timely manner?

The STS analysis comprises the following set of tasks:

- ◀ Identify the KPIs,
- ◀ The layout of the system of how materials pass through the people and processes and the physical/departmental boundaries that currently exist,
- ◀ Identify current business units which perform groups of steps separate to each other,
- ◀ Collect data on variances which occur in each step of the conversion process,
- ◀ Construct a variance matrix displaying interrelationships among variances within and across business units,
- ◀ Identify key variances that have the greatest impact on success criteria or that cause many other variances to occur,
- ◀ Suggest technical changes to achieve better variance control e.g. technical changes to improve information systems to enhance feedback to employees,
- ◀ Suggest social changes to make the work more challenging and meaningful e.g. allowing staff to be more involved in making the technical process run more smoothly,
- ◀ Share analysis and discussions of findings with the rest of the organisation to allow individuals to feel greater autonomy in the process of change.

These improvements in variance control might include redrawing departmental boundaries, altering the roles of supervisors, changing reward systems, opening communication channels, change selection criteria, etc. Suggestions for changing the social system should be evaluated for their ability to contribute to improved variance control as well as against improvements according to environmental demands and the stated vision of the organisation's ideal future.

Keep in mind that although much of the functions of STS analysis are performed at a point in time. Data needs to be collected over time to truly understand the dynamics and allow statistical analysis and comparison, leading to a deeper understanding of causality.

1.6. Conclusion

Introducing new technology is not as simple as putting it in place, training people and then expecting them to perform in the way you want them to. Performance drivers are varied, but they are generally controllable. You just need the right framework to analyse current performance and put in place the systematic change required to ensure all the new parts work cohesively. The socio-technical systems approach is an excellent tool to support this process.

2. About the primary Author

Craig is the founder and Managing Director of The Performance Technologies Group (PTG Global), with over 15 years in user experience, user interface design and change management.

Craig runs the R&D function at PTG, having produced a number of world firsts including XPDesign – the first systematic methodology for user interface design and Certified Usable – the first guarantee for usability and user experience.

Craig has been the primary architect behind many of Australia's most popular websites including CBA, Virgin Blue and ASIC and works on cutting edge technologies such as touch, medical and special-purpose applications.

Craig holds a Masters qualification in organisational psychology, is a member of the APS and the APS College of Organisational Psychologists and is a Registered Psychologist in NSW. He is also an Associate of the University of NSW and Macquarie University.



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