Using the DIKW Hierarchy To Move from Enabler to Driver

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"Where is the wisdom we have lost in knowledge?
Where is the knowledge we have lost in information?"
T. S. Eliot's *The Rock* (1934)

» The Data-Information-Knowledge-Wisdom (DIKW) Hierarchy offers some clues as to how IT Departments can move from being a passive observer of the business (i.e. being an enabler) to being an active participant in it (i.e. being a driver).

» Focussing solely on data and information limits IT to being an enabler, whereas broadening its attention to knowledge and wisdom positions IT as a driver.

» Knowledge is about decision making and IT can play an active role in helping the organisation make better decisions.

» Wisdom is about evaluating the outcomes of those decisions and again IT has a role to play in helping decision makers evaluate and improve their decisions.

» IT cannot abandon its data and information responsibilities, rather CIOs need to appropriately balance resources and management attention across all four DIKW disciplines.

» A good place to start developing an understanding of knowledge and wisdom is to change the way new projects are approached. Rather than using the traditional approach, focusing on data and information, take an alternative approach: start with wisdom and work backwards through knowledge, information and data.

As IT Departments have morphed from Data Processing Departments into MIS Departments and finally into their current incarnation, they have maintained their focus on data and information, and their insistence that IT is only an enabler.

Those IT Departments that are no longer content being passive observers of the business (enablers) and want to become active participants (drivers) can use the 'Data-Information-Knowledge-Wisdom (DIKW) Hierarchy' to chart a way forward.

If IT continues to focus on data and information it will remain an enabler, because data and information have no inherent value. There is no value in knowing something, value is only created when you act on that knowledge. In business, acting on information is about decision making, and decision making is the realm of knowledge and wisdom.

By helping the organisation make better decisions, IT can have a substantial and direct impact on the organisation's performance. After all, an organisation's current performance is the result of past decisions.

Improving decision making is not a question of delivering better information to decision makers – that is necessary but insufficient. Instead, IT must understand how business performance is measured, what decisions affect performance and how those decisions are made – and then proactively deliver the insights needed to help decision makers make those decisions.

DIKW was originally conceived as a hierarchy, but in the context of IT, DIKW needs to be viewed as four separate disciplines rather than hierarchical levels. IT Departments will need to be proficient at all four disciplines concurrently, rather than move up the hierarchy.

The challenge for CIOs is to balance resources and management attention across the four disciplines so as to deliver maximum value to the organisation.

Data

During their initial incarnation as Data Processing Departments, IT spent all of its time collecting, storing, tabulating and manipulating data. To this day, data continues to be the raw material that underpins everything that IT does.

In any endeavour, the quality of raw materials is fundamentally important to the quality of the finished product. Just as the quality of ingredients will determine the quality of a meal, so too the quality of raw data will determine the value of the information,

knowledge and wisdom than can be gleaned from it. Unsurprisingly then, IT Departments spend a lot of time on data management: governance, architecture, security, quality, warehousing, master data management and managing databases.

Data management is an important part of IT's work, but it can't be its sole focus. Like all raw materials, data has some intrinsic value, but to extract the maximum value from it, it must be converted into something more valuable: information, knowledge and wisdom.

IT needs to continually improve its data management capabilities and find more efficient and effective ways of dealing with the data so that resources and management attention can be freed up to focus on areas that add more value.

Information

Over the last 10-15 years, IT's attention has been largely focussed on three areas: enterprise resource planning, business intelligence and, most recently, service oriented architectures. Each of these is a different solution to the same problem: silos of data.

IT Departments are comfortable dealing with information for two primary reasons:

- Improving the way information is aggregated, organised, presented and delivered usually requires the procurement and deployment of new tools – which is IT's core business.
- IT has traditionally viewed itself as an 'enabler'. IT is happy to add value by delivering information, but doesn't want to get involved in how that information is actually used.

In order to become true strategic partner in the organisation, IT must move out of its comfort zone in information and branch out into knowledge. The true value of information is only released when information is acted on, that is, when decision makers use it to make decisions.

Delivering the 'right information, to the right person, at the right time, in the right format' is necessary but insufficient. What IT really needs to do is help decision makers make decisions – and information is only one input into the decision making process.

Knowledge

Knowledge is about interpreting information for the purpose of making decisions. In order to make a good decision, you need:

- Information on which to base the decision
- A decision maker which is knowledgeable and experienced in the subject area relating to the decision
- An understanding of alternative courses of action, their consequences and tradeoffs, and criteria for choosing between the alternatives

IT has a role to play in each of these areas:

- **Information**: this was covered in the previous section on information. Good information is fundamentally important to good decision making.
- **Experience**: this is where traditional knowledge management fits in. The fact that most knowledge management initiatives in the mid-to-late 1990s failed to achieve the expected benefits, shouldn't discourage IT from trying again (but this time paying more attention to people and process, not just the technology). Knowledge management converts tacit knowledge to explicit so that knowledge and experience can be shared by decision makers throughout the organisation.
- **Alternatives**: modelling and scenario planning tools allow decision makers to explore alternative courses of action. Rather than deploying new tools specifically for modelling and scenario planning, IT could bring together a suite of existing tools and demonstrate how they can be used to improve decision making (e.g. BPM tools allow for 'what if' analysis on business processes, BI tools also have such capabilities, as do PPM tools).

Generally speaking, decision makers are satisficers not maximisers. It's often cost prohibitive and impractical to find the 'best' solution, so decision makers decide on 'adequate' ones instead. If IT can move the needle from 'adequate' to 'best' in as many decisions as possible, IT will move from being an enabler to being a driver, an active participant in the decision making process.

Helping the organisation make better decisions is a significant improvement on merely focussing on data and information, but in the next stage, wisdom, IT adds more value by helping the organisation evaluate the outcomes of those decisions.

Wisdom

Wisdom is about consistently applying knowledge to desired results. In business, these 'desired results' are improvements in key performance indicators.

The obvious place to start gaining wisdom is with benefits realisation. Large projects have business cases which list the benefits the project will deliver. It is absolutely critical that those benefits are tracked. If the project delivers the benefits, then it was a wise decision to pursue the project. If it doesn't, then some analysis should be done to indentify the reasons why. The outcomes of this analysis should added to the collective knowledge of the organisation and thus fed into future decision making. Continuous improvement is the very essence of wisdom. It's acceptable (though undesirable) to make bad decisions, so long as you don't make the same bad decisions repeatedly.

Most projects today have a large IT component and span departmental boundaries, so IT is ideally positioned to help the organisation manage benefits. This help should go beyond merely providing tools, KPI dashboards and reports, and then leaving business managers to their own devices. IT has behind-the-scenes access to systems and data, a whole-of-organisation view and relevant expertise in business analysis, process design, data mining – it should use these to diagnose problems and suggest solutions when benefits aren't being realised. By taking an active role in benefits realisation, IT will further demonstrate its ability to actively drive the business forward, rather than being a passive observer (or enabler).

Where To Start

The easiest place for CIOs to start building capabilities across all four DIKW disciplines is to change the way new projects are run.

Traditionally when a new project gets the green light, business analysts gather requirements, architects design a solution and the solution is then procured or built. Finally the solution is deployed and handed over to the project sponsor and operations. In this traditional approach, IT begins with data (e.g. data models, screen designs) and finishes with information (e.g. reports, dashboards). IT has delivered an 'enabler' and now it's the project sponsors responsibility to do something with it.

Rather than staring with data and information, an alternative approach is to start with wisdom and work backwards. Here's an example of how that may work.

Acme Insurance wants to reduce the costs of its contact centre. Management decides that the best way of doing this is to offer self-help functionality on their website so that customers don't need to call the contact centre. The project may proceed like this:

- **Wisdom**: the KPI that need to be tracked is 'total cost of contact centre'. If the project delivers the projected savings then the decision to pursue the project will have been a wise one. The entire project team should be completely focussed on delivering a solution that will deliver those results.

- **Knowledge**: The project team took the time to understand the KPI and learned that contact centre costs are largely determined by three things:

  - the volume of calls coming in
  - the average handle time for each call
  - cost of staff.

  If costs are not falling then there there's a problem in one (or all) of these areas and management will want to know what corrective action they should take to see the greatest improvement in the shortest time.

  There are a number of potential corrective actions, for example:

  - improve the useability of the website
  - greater promotion of the self-service option
  - route calls so that expensive staff get more complex calls (but fewer of them)

  If the project team anticipates these possible corrective actions then the solution will be designed to produce the information required to help management decide on a course of action. And when a decision is finally made, this same information will be used to monitor the outcome of that decision, allowing for further corrective action if necessary.

- **Information**: The information needed to make the decisions described above will reside in a variety of systems (e.g. the website, the call handling system, the CRM

system). It all needs to be brought together made available to decision makers in a useable format.

For example, matching up website usage statistics with the demographic data in the CRM system may reveal that people with more than one insurance product call the contact centre more than people with only one product. This may mean that multi-product customers find the functionality cumbersome (i.e. corrective action would be to improve functionality). But further analysis may reveal that 90% of multi-product customers are over 50 years old and that may explain their reluctance to use the website (i.e. improving functionality would be of no value). The key is to ensure that all information required to make decisions can be delivered to decision makers.

- **Data**: The project team should ensure that three types of data are collected:
  - Data required to track the KPIs that the project was to deliver
  - Data required to help decision makers take corrective action when those KPIs are not where they should be
  - Operational data requested by project stakeholders (e.g. users and project sponsors).

In almost all situations you will need more than the operational data requested by project stakeholders. For example, you may ask contact centre callers a few questions about the self service option (e.g. did they know about it before they called, have they used it, what did they think of it). The project sponsor is unlikely to ask for such data to be collected but it's critical to future decision making.

Hopefully this example demonstrates that taking a holistic view across all four DIKW disciplines would produce a better outcome than the traditional IT focus on data and information.

Conclusion

Many IT Departments are content to stay in their comfort zone of data and information. With decades of experience in these areas, and a tradition of being an 'enabler' many IT Departments wont find it easy to branch out into knowledge and wisdom.

Obviously, IT Departments can't abandon their data and information responsibilities, but those that want to be come active participants in the business, rather than mere passive observers, will need to become proficient in helping decision makers make decisions (knowledge) and then helping them understand the outcomes of those decisions (wisdom).

The challenge for CIOs is to appropriately balance resources and management attention across the four DIKW disciplines. ❑

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