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# *eBusiness patterns and strategic change*

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## **Abstract**

Within this paper we develop and explore the concept of a business pattern. The term business pattern is used to refer to a coherent and repeating sequence of action involving humans and technology appropriate to some domain of organisation. We demonstrate a way of visualising such patterns in a medium we refer to as pattern comics. We argue that such an approach to visualisation offers an innovative way of making sense of the issue of strategic change, particularly as it concerns the domains of electronic business (eBusiness) and electronic commerce (eCommerce). We utilise the developing domains of online retail in general and online grocery in particular to ground our theorisation.

**Keywords:** Business pattern; Pattern Comic; Strategy; Change; Benchmarking; eBusiness; eCommerce, online retail

# *eBusiness patterns and strategic change*

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*‘Creativity involves breaking out of established patterns in order to look at things in a different way’*

Edward de Bono

## **Introduction**

Electronic business or eBusiness is that area which involves the interaction of ICT, information systems and information with organisational activity (Beynon-Davies, 2013). Not surprisingly, in such terms, eBusiness is modern business, because ICT, information systems and information are essential to the effective working of any modern organisation. Over a number of decades economic markets globally have been subject to two inter-dependent trends: the increasing centrality of information to effective activity and the increasing reliance on electronic networks for effective communication. Not surprisingly many contemporary markets are electronic markets or eMarkets: markets in which economic exchanges are conducted in whole or part through ICT. Not surprisingly, modern trade or commerce is heavily reliant upon electronic commerce or eCommerce.

Both eBusiness and eCommerce are clearly socio-technical phenomena. The term socio-technical was first used in the context of research on systems conducted by Trist, Bamforth and Emery while working for the Tavistock Institute in London and particularly while engaging with British coal mining as a problem situation after the Second World War. At that time coal was a critical source of energy for the country but the industry itself was experiencing a number of problems. Despite investment in new production technology productivity was actually in decline. Also, the workplace was subject to high rates of absenteeism and high rates of staff turnover were evident throughout the industry. Trist, Bamforth and Emery investigated a number of ways of working at different mines and concluded that the way of organising work adopted by convention at most mines did not take advantage of the opportunities afforded by developments in technology (Trist and Bamforth, 1951). The key conclusion they drew from this was that the integrated design of the social or work system with the technical or technology system is critical to achieving effective performance.

Socio-technical thinking has heavily influenced work both within Information Systems as well as within Organisation Science. Zammuto *et al*, for instance, argue that *‘the relationship between technology and organizational form and function has been of interest to organization scientists for over 50 years ... [but that,] ... interest in this relationship has declined significantly over the past thirty years, a period during which information technologies have become pervasive in organizations and brought about significant changes in them.’* They further suggest that *‘a conceptual shift - from ‘organizational form’ to ‘forms of organizing’ - is needed...viewing the social and technological systems of organizations in concert, which was a critical part of sociotechnical systems theory in the 1950s, is a perspective that the field needs to rediscover because IT has become inextricably intertwined with social relations to weave the fabric of organization.’* (Zammuto, Griffith, Majchrzak *et al.*, 2007).

However, a number of problems exist in attempts to turn the orienting principle of a socio-technical view into a coherent way of understanding and engaging with organisational action and change. First, in attempting to analyse and design socio-technical systems due and equal justice must be given to both work (social) systems and technology (technical) systems. Second, the ways in which work and technology entangle in practice should be evident in any representations we make of such systems. Third, traditionally the design artefacts produced in the analysis and design of socio-technical systems

are constructed with the needs of analysts in mind rather than organisational actors. Implicit in the analysis and design of socio-technical organisation in this manner is the framing of such activity as a technocratic endeavour.

Within this paper we develop and explore the concept of a business pattern. This concept, we believe, offers a coherent and practical way of making sense of what socio-technical organisation actually constitutes. We use this term to refer to a coherent and repeating sequence of action involving humans, technology and artefacts appropriate to some domain of organisation. As such, we propose this idea to better ground socio-technical ideas – particularly as they concern areas such as eBusiness and eCommerce. We begin the paper with a description of what a business pattern means, adapting material from the literature on organisational routines and organisational storytelling.

This leads us to discuss a way of visualising business patterns in a medium we refer to as pattern comics. Pattern comics are structured but simple visualisations which are created with the express purpose of opening up dialogue and establishing common ground between analysts and organisational actors about the nature of some domain of socio-technical action. These design artefacts are proposed as a useful way of helping make sense of patterns of socio-technical organisation as they are currently conceived or as how various stakeholders would like them to be.

We explore within the current paper how the concept of a business pattern and the associated design artefact of a pattern comic offer an innovative way of making sense of and bringing together a number of problematic issues within contemporary business such as managing complexity, innovating with IT, developing strategy, modelling the business, motivating and managing change, and benchmarking and reusing best practice. The contemporary domain of online retail in general and online grocery in particular is used as a way of illustrating the efficacy of the approach throughout.

### **eBusiness strategy**

The Austro-American economist Joseph Schumpeter coined the phrase *creative destruction*, originally to describe a process embedded within Capitalism where one economic system is destroyed and another economic system is created from its ashes. Management theorists have adapted the term to refer to a process by which new ways of doing business effectively destroy pre-existing approaches. Many contemporary examples of this phenomenon rely upon various forms of eBusiness and eCommerce. For example, many ‘content’ industries are undergoing a process of creative destruction. Technological change engendered by the increasing penetration of information and communication technology not only within business itself but also within the wider value-network of business is facilitating new ways of producing, distributing and consuming, music, books, movies etc. (Beynon-Davies, 2012; Beynon-Davies, 2013).

In the face of environmental turbulence organisations do two things: they plan strategy and they manage change. Over the last 30 to 40 years the trend has been for the high-ranking manager’s job to be seen as developing an explicit organisation strategy and creating effective ways of planning and implementing it (Ansoff, 1965). Within eBusiness and eCommerce, the manager’s concern is with how strategies for information, information systems and ICT can be developed and aligned with organisation strategy. Because of the creative destruction ongoing in many industries, there has been increasing interest in finding better ways of formulating and managing changes to activity infrastructure and ICT change. It seems appropriate to refer to this as a search for better ways of doing eBusiness strategy-making.

Some of the difficulties in this area relate to the question of how does general business strategy relate to eBusiness strategy? It is possible to argue here that there are at least three different viewpoints on what eBusiness strategy is (Beynon-Davies, 2013). The appropriate viewpoint on what eBusiness strategy constitutes is defined by organisational context. In other words, eBusiness strategy will depend on the business model we develop for eBusiness and whether this business model is the same as the business model for the entire business or whether it is subsumed within the general business model. Options therefore include a complete overlap between organisation and eBusiness strategy, eBusiness strategy as a business unit strategy, and eBusiness strategy as a process strategy.

In the most extreme form there is little or no distinction between organisation strategy and eBusiness strategy. This conception of strategy is appropriate if the eBusiness is effectively the entire corporation. In practice it may only be applicable if a traditional bricks and mortar company sets out to completely re-engineer its processes around ICT, or a new green-field eBusiness is established – a clicks-only strategy.

In many companies the eBusiness strategy applies only to a particular part of the business: a division, department or unit. In one approach, a firm segments its eBusiness activities as a separate organisation isolated from the parent firm. This organisation is expected to innovate with new products and services. At the other extreme, the eBusiness activity is fully integrated with the parent organisation but under control of specific business units: a clicks and mortar strategy. In a middle path, companies run their eBusinesses as separate but parallel operations, implying a certain level of integration between the parent organisation and the eBusiness but also a certain degree of autonomy for the eBusiness.

Lastly, a company might choose a key organisational process or activity system, or perhaps an integrated set of processes, for radical redesign with ICT innovation. For example, it could concentrate on redesigning its supply chain or customer chain processes. This is probably the most common current form of eBusiness strategy amongst contemporary business.

So Amazon.com's eBusiness strategy will equate to its organisation strategy, because it is an eBusiness-oriented company. Other companies might develop supply chain management or customer relationship management as an eBusiness strategy, or pick an area of eCommerce such as B2C or B2B eCommerce. These might be either business unit or process strategies depending on the structure of the organisation. We illustrate some such strategies within the related areas of online retail and online grocery in further sections.

Strategy-making then might be seen as the process of developing coherent visions of change and planning for action to meet established objectives for change. To have a plan of action we need to know what the action is currently and what state of action we want to achieve. As we have established, strategy is particularly difficult in the modern context because in areas such as eBusiness and eCommerce, activity change is so intertwined with technological change. This requires us to think more clearly about organisations as complex networks of socio-technical action (Zammuto, Griffith et al., 2007).

## **Business patterns**

The idea of pattern is central to many disciplines. For instance, the American architect Christopher Alexander (Alexander, 1964) proposed that architectural design is based on a number of archetypal patterns which encapsulate fundamental principles of building design. This idea has had much

influence within other disciplines such as software engineering where design patterns are proposed as general solutions to programming problems (Hay, 1996).

A pattern is anything which repeats across more than one situation. The things that repeat within a business pattern are various types of action undertaken by not only humans but also by machines and somewhat by artefacts. We therefore see business patterns as enacted routines of socio-technical action.

There is a developing consensus about three core features of the organisational routine (Feldman and Pentland, 2003). An organisational routine is seen as a repetitive pattern (1) of inter-dependent actions (2) involving multiple actors (3). There is also growing awareness of the differences between routines in principle and routines in practice. (Pentland and Feldman, 2008).

We propose that a business pattern expands upon the notion of an organisational routine in a number of ways. A given business pattern is seen to be made up of a number of standard elements:

- A finite set of actors or characters. Actors may be individual or collective. They may be humans or institutions, artefacts or even ‘machines’.
- A finite set of descriptive states relevant to some a domain of socio-technical organisation.
- A weak order in time expressed on the set of states. This defines the chronology of states for the domain.
- A binary causal relation between some pairs of states. The relations will run from earlier states to later states in the chronology. These ordered pairs can be considered events within the business pattern.
- A finite set of actions that transform some elements of the states of the world. The actions transform earlier to later states in the chronology of the business pattern. Actions are partitioned into acts of articulation of data structures, the communication of intent which results from such articulation and the coordinated, instrumental action which results from such communication.
- A mapping of the set of actions onto the set of actors. This will show which actor(s) performs which action.

Two features of a business pattern deserve further explanation – the partition of the set of actors into humans, machines and artefacts and the partition of the set of actions into actions of articulation, communication and coordination. First, the partition of the set of actors is proposed to better account for the nature of socio-technical action. Real patterns of routine action within some domain of organisation are almost never carried out by humans alone. Such patterns are better conceptualised as socio-technical or possible sociomaterial ensembles of actors (Author, 2012) that include not only machines such as computers but also artefacts such as records or data structures more broadly (Pentland, M.S, Becker et al., 2012). Second, the partition of actions is proposed to better account for the relationship between representation, communication and coordinated performance in any constructive conceptualisation of the accomplishment of organising. This partition therefore defines a business pattern as a complex of three types of coupled action which we refer to as articulation, communication and coordination.

A given business pattern can be considered either as a pattern in principle or a pattern in practice. A pattern in principle is an abstraction which represents the ideal or schematic form of routine action within some domain. A pattern in practice consists of a collection of specific actions undertaken by specific actors in specific places and at specific times. These two viewpoints are mutually constituted

through structuration (Giddens, 1984). Patterns in principle constitute resources for actors that enable and constrain the performance of patterns in practice. Patterns in practice constitute actual performance that create and recreate patterns in principle.

### **Pattern comics**

We have found that the production of comics to represent business patterns an effective means for getting business people to think like business analysts (Beynon-Davies, 2014). Comics are particularly useful as instantiations of business patterns for a number of reasons. First, they are both a visual and textual genre. Comics are a unique hybrid that exploit in a freeform way the strengths of both images and text as media for portraying a coherent story-line (Gershon and Page, 2001). Second, comics are well-known and well-read as popular genre. Because of such familiarity, as intermediate representations comics appear to be readily accepted and understood by non-technical actors. Third, this genre is particularly well-suited for expressing the ways in which actors take action. They are also good at expressing the transformation resulting from particular actions. Fourth and finally, comics utilise well-established conventions for expressing events as ‘movement’ of action through time and space. Therefore, they offer a particularly useful way of expressing the dynamics of business patterns, such as routine work.

The structure of the comics we use to represent routine action is illustrated in figure 1. Each such pattern comic is made up of a series of panels, with each panel consisting of one or more cells. The sequencing of cells normally follows some convention of presentation such as a right to left and top to bottom arrangement across the panel. When such a convention is broken, dotted arrows are used to establish the chronology of the narrative.

Each cell is generally used to represent a snapshot of action within an overall plot and a linked series of such cells is used to narrate the story-line. When actors are represented, speech bubbles (to indicate external dialogue) and thought bubbles (to indicate internal dialogue) are attached to pictured characters – particularly within patterns of informative action, as we shall see. Captions are also attached in a more free-form way to cells and are used to convey additional message content over and above that conveyed by visualisation.

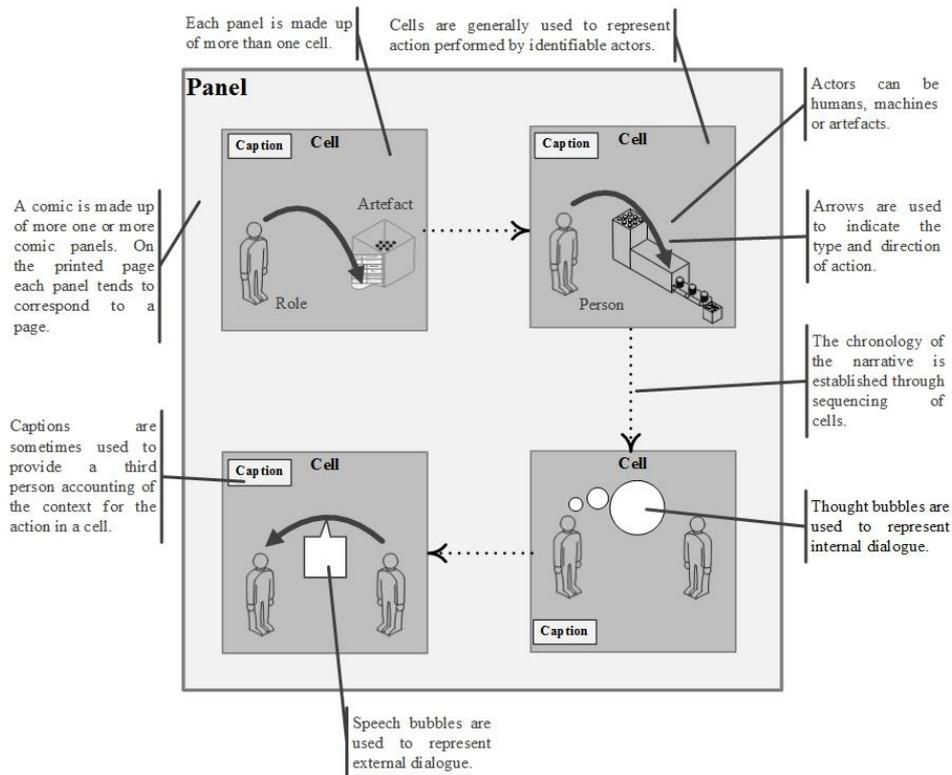


Figure 1: The elements of a pattern comic

## Patterns of communication

We do not have space within the limitations of a journal paper to describe all of the ways in which we have used comics to represent facets of socio-technical action. Therefore, within this section we limit our description to the use of comics for representing patterns of communication within routine action. This exploits the speech act theory of Austin (Austin, 1971) and Searle (Searle, 1970) and has much synergy with recent work within the ‘communication as constitutive of organisation’ viewpoint (Ashcraft, Kuhn and Cooren, 2009) as suggested within the literature of Organisation and Management Studies. This is the idea that ‘*communication generates, not merely expresses, key organizational realities*’.

Within this type of pattern comic, communication is conceived of as a network of communicative or informative acts. The core constructs needed to model informative acts and patterns are actors and informative events. Informative events are acts of communication in which a message is transmitted between a sending actor and a receiving actor. Messages have two facets: intent and content. The content refers to the proposition being communicated: the intent refers to the purpose that a particular actor has in making some communication.

Drawing upon speech act theory (Searle, 1975), we can portray five important ways in which actors seek to influence the actions of others and as a by-product of this to ensure coordination of instrumental activity. Such communicative types are distinguished in terms of differences in intentions that the actor performing the communication has: assertives, directives, commissives, expressives and declaratives.

Assertives, directives and declaratives are particularly important to making sense of the cases we describe in further sections. *Assertives* are communicative acts that explain how things are in the world, such as reports which commit the sender to the truth of the content expressed in the report. *Directives* are communicative acts that represent the senders' attempt to get the receiver of a message to perform or take action, such as requests, questions, commands and advice. Finally, *declaratives* are communicative acts that aim to change some state of the domain through the communication itself. Within organisational settings declaratives are frequently used to represent that some state of performance has been achieved.

In terms of an informative pattern each cell within a comic panel consists of one or more informative acts enacted by one or more actors or roles. Solid arrows are drawn between actors to indicate the direction of message transmission. A speech bubble is attached to the arrow and annotated with the intent expressed as a keyword (ASSERT, DIRECT, COMMIT, DECLARE, EXPRESS) and the content is placed within square brackets. The intent expresses the illocutionary force of the communication while the content represents an abstraction of the key proposition contained in the message.

As mentioned, within our notion of business patterns, actors may be humans, machines and artefacts. Much action within contemporary organisation is not enacted by humans but by machines; particularly by ICT systems. So machines or technology systems more generally are significant actors within any notion of organisation. But we should perhaps broaden this out further and refer to any technology as potentially acting within the re-production of organisation. It makes sense, particularly within the context of patterns of eBusiness and eCommerce, to think of organisational records, or in fact any form of representation, as having agency – the ability to act (Cooren, 2004).

An example of a comic cell relevant to the case of online retail is provided in figure 2. This particular event within the larger communicative pattern takes place between two actors and involves two related informative acts. Here a customer (a human or more precisely a role played by a human) is directing a B2C Web site (a 'machine') to search for a particular product. The B2C Web site responds by asserting the details of the product and its current price. The keywords DIRECT and ASSERT within the speech bubbles define the intent of the two informative acts. The text between square brackets is meant to provide an abstraction of the content provided in these two acts of communication.

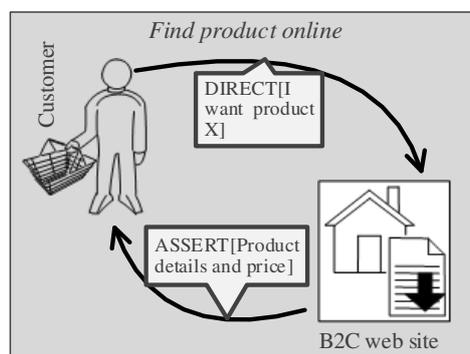


Figure 2: A cell from an informative pattern comic

## Patterns as templates

The idea of a business pattern suggests that we can observe common ways of doing things, communicating about things and recording things across different organisations. In this sense it has a resonance with the idea of best practice and process benchmarking (Stapenhurst, 2009), familiar in the business literature. A benchmark was originally a mark cut in a wall or pillar of some building and was used as a reference point to take measurements. In business terms a benchmark now typically refers to some organisation or process which is regarded as in some way exemplary. In such a sense, benchmarking refers to the idea of comparing one's own domain of organisation with that in the best practice organisation and perhaps also adopting some of the practices of the best practice domain.

For instance, does the idea of a local authority as a form of organisation suggest a core set of business patterns? This begs a further question: should one local authority organise the provision of services in a similar manner to another local authority? And yet a further question: how do we know that one pattern of doing things is better than another way of doing things?

The ancient Greek playwright Aristophanes once said that *'men of sense often learn from their enemies. It is from their foes, not their friends, that cities learn the lesson of building high walls and ships of war...'* The very idea of patterns also suggests their use as lessons for reuse. In other words, it becomes possible to consider some existing business pattern, which we particularly see as in some way good, as a template for the design of performance in other organisational situations. Therefore, the idea of pattern suggests we might use a particular pattern to encapsulate some idea of appropriate performance – sometimes called good or best practice. We might even use this approach to benchmark, that is, to measure in some way actual performance against some expressed ideal performance in such a pattern.

Benchmarking is normally conducted to compare the strengths and weaknesses of some unit of organisation against some other comparable unit. For instance, a given production process might be analysed and compared to that used by a competitor. Or alternatively, consider the way in which coffee is sold in a coffee shop. This may be documented as a pattern and compared with how fast food is sold in some other outlet. This might enable us to abstract a general pattern for fast food retail. Such a pattern might suggest ways in which selling other forms of fast food should potentially operate. Or consider teaching on an undergraduate or postgraduate module at a university – certain elements of this business pattern might be considered exemplary and promoted by quality assurance mechanisms across the university sector. Finally, consider the pattern of handling patient appointments. There are elements of this pattern which are relevant to a number of different healthcare domains such general practice, dental surgeries and even outpatient clinics.

But one should not assume that business patterns just occur within the domain of one institution. Many business patterns that deliver value to some stakeholder group involve actions that cross institutional boundaries – they bridge across the space between organisations. Take the simple event of two people deciding to engage in a civil marriage. This decision actually sets off a whole train of actions, many of which are performed by different public sector agencies. First, the two people have to apply to some civil registry to get married. This normally involves verification of details supplied by the applying persons and usually checking of identity and citizenship requirements using documentation such as passports and birth certificates. Assuming this verification completes satisfactorily then a marriage ceremony is booked and conducted. However, after the marriage certificate is issued a whole series of other agencies will need to be informed of the change to each person's marital status and other possible changes to personal details such as change of residence and surname.

## **Online retail as a business pattern**

To help ground our discussion of the use of business patterns for strategic change we consider within this section the high-level patterning evident in a growing area of business. We consider using pattern comics as a means of documenting two related business patterns prevalent in the contemporary online market of retail. A tipping point has been reached in retail over the last couple of years in countries such as the UK. The UK has the highest level of engagement with B2C eCommerce in Europe. More goods are now sold through B2C eCommerce web-sites than in high street stores, particularly at key points in the retail calendar such as the period before Christmas.

Most online retailers follow an established pattern for this sort of business. Figure 3 illustrates the informative pattern underlying many forms of online retail as a pattern comic. This comic limits itself to describing the narrative of communicative action appropriate to online retail.

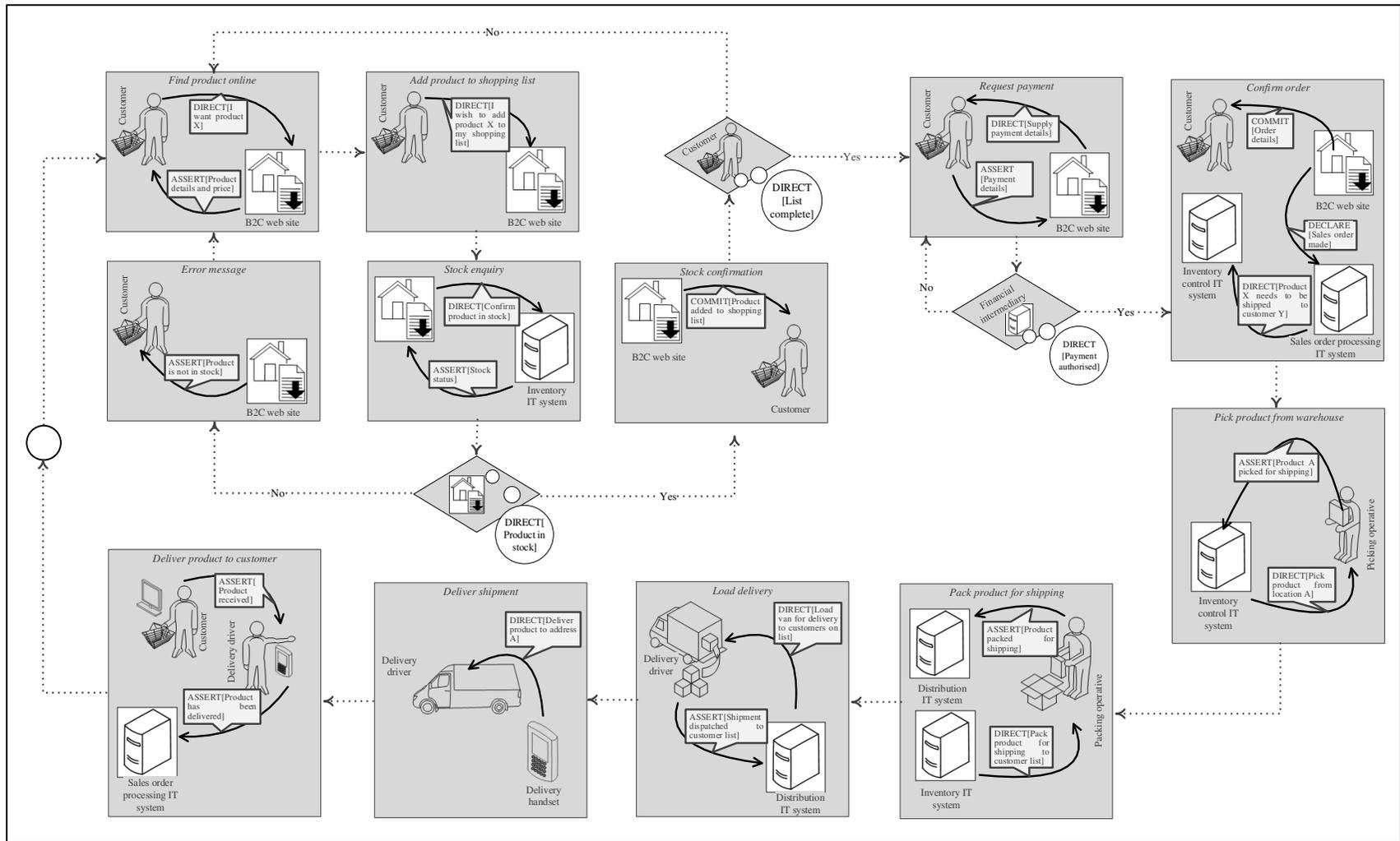


Figure 3: Online retail informative pattern

Within this pattern comic, online retail is portrayed as a pattern of communication between human actors such as customers and picking operatives and technological actors such as a B2C eCommerce web site and an inventory IT system. Decision points are also represented upon the pattern comic as standard flowchart symbols. Note however that decisions are made on such comics by named actors. Also, such decisions represent internal directives to action. The pattern is also represented as a cycle, because hopefully the same customer will return to the web-site a number of times to do business.

The pattern illustrated is sufficiently high-level to represent a common template of communicative action amongst a vast number of online retailers from Amazon to Tesco. It can clearly be used to help think through a number of issues relating to socio-technical change. For instance, returns are a significant cost to an online retail company. An evaluation of this situation by major online retailers suggests that a small percentage of customers are responsible for a high volume of returns. The key question is how should a particular online retailer develop strategy to deal with this problem? One clear place to start is with the existing communicative or informative pattern. In other words, what changes might be required to the pattern model of online retail expressed in figure 3 to better handle returns?

Another key question is what areas of differentiation might it be possible to build upon the existing pattern? As more and more business moves online, commercial organisations are continually reviewing and re-designing aspects of their business patterns. For instance, some of the key costs in online retail clearly lie in the costs associated in getting goods ordered to the customer. But what if we can get the customer to take some of this burden away from us? This underlies the rationale of the so-called 'click and collect' pattern, which we might illustrate as an informative pattern in figure 4. Here the customer selects a store for the goods to be delivered to and from which they can collect them. This not only has the advantage of helping to reduce some of the distribution costs associated with online ordering, it also gets the customer back into our stores, perhaps to generate more business from them.

However, the increasing relevance of the business patterns of online and click-and-collect retail should suggest to us a need to review the established pattern of high-street retail. Some commentators have suggested, for instance, that the shape of the high-street store is likely to change significantly over the next decade. Rather than providing the primary access channel for goods and services it may become positioned as a 'viewing and trying' platform, supporting various patterns of online retail as the dominant access channel used by customers.

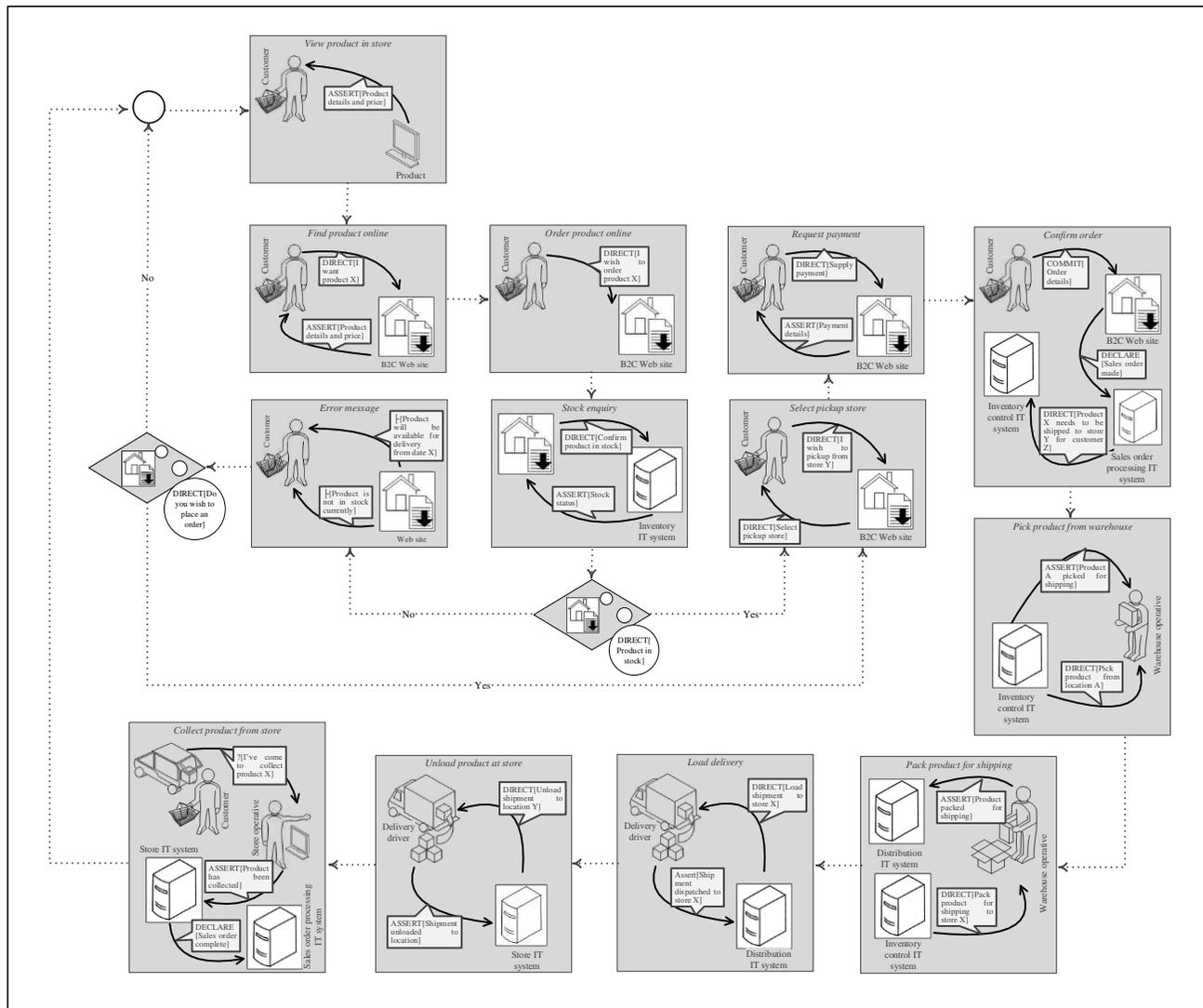


Figure 4: Click and collect informative pattern

Clearly there are common elements between the pattern visualised for online retail and that visualised for click and collect retail. Much of the ordering and payment actions undertaken by the customer, for instance, are common to both these patterns. The key differences lie in the pre-sale and post-sale stages added to the click and collect pattern. Prior to sale the customer has opportunity to view products in store. After sale, the customer has to collect products delivered to a designated store.

This suggests ways in which eBusiness strategy might be developed in this case. The informative action of the ICT systems such as the B2C web-site, sales-order processing ICT system, distribution ICT system and store ICT systems clearly need to be adjusted to give the customer the option of picking up the product from store. The actions of warehousing operatives, delivery drivers and store operatives also need to change to accommodate the click and collect pattern.

### **Patterns of online grocery**

On-line grocery is a particularly interesting aspect of on-line retail because of the way in which eBusiness strategy is currently being played out in experiments with various business patterns by major market players. On-line grocery is clearly a specific form of business to consumer (B2C) eCommerce. Within the UK it began in 2000 when the tesco.com domain name and associated Web-site was formally launched. However, this market sector has traditionally experienced problems with uptake. Analysts believe that this may have been due to customer resistance, with many people wanting to examine fresh produce before they buy. Also grocery as a retail sector traditionally has a low-markup. Delivery costs embedded within the operating patterns of online grocery can thus erode profit.

Nevertheless, over the last five years steady growth has meant that online grocery constitutes something like 5% of grocery sales in the UK. There is also a predicted doubling in the size of the market within the UK over the next five years. This is due to a number of convergent factors such as the growth in digital natives and the consequent changes to consumer behaviour, the less time that people generally have to shop and a growing elderly population mix. Many supermarket chains that held off from developing eBusiness strategy in this area have recently embarked upon online grocery as a key part of their offerings.

Food retailers have interestingly taken different strategic decisions in relation to online grocery. The four big supermarket chains in the UK (Tesco, Sainsbury's, Morrison's and Waitrose) now all have an on-line grocery arm. Morrison's and Waitrose currently work in partnership with the online food retailer Ocado. The Coop is investigating getting into online grocery and in developing strategy in this area is running a series of experiments using different delivery patterns. But online grocery is clearly not a priority for many food retailers. Marks and Spencer interestingly has stayed out of online grocery. Likewise, the low-cost retailers, Aldi and Lidl, have not currently invested in an online grocery arm.

A number of reasons appear to have persuaded supermarket chains like Morrison's to develop an online grocery strategy. First, consumer research suggests that online shoppers tend to be the best customers. They are typically more prosperous than the average customer, have children, and consequently spend up to 30% more with a store. Also, distribution centres on cheap land consume less capital than spending on urban stores.

All the big four supermarket chains such as Tesco operate a traditional model of supermarket retail designed to manage the flow of physical goods from suppliers to customers. This involves maintaining a large floor-space stocked with products. Customers travel to the supermarket, pick

products from the shelves and transport them home themselves. This business model is expressed as a high-level coordination pattern in figure 5. Within this type of pattern comic the cells represent major events of coordinated, instrumental action pertinent to some domain of socio-technical organisation.

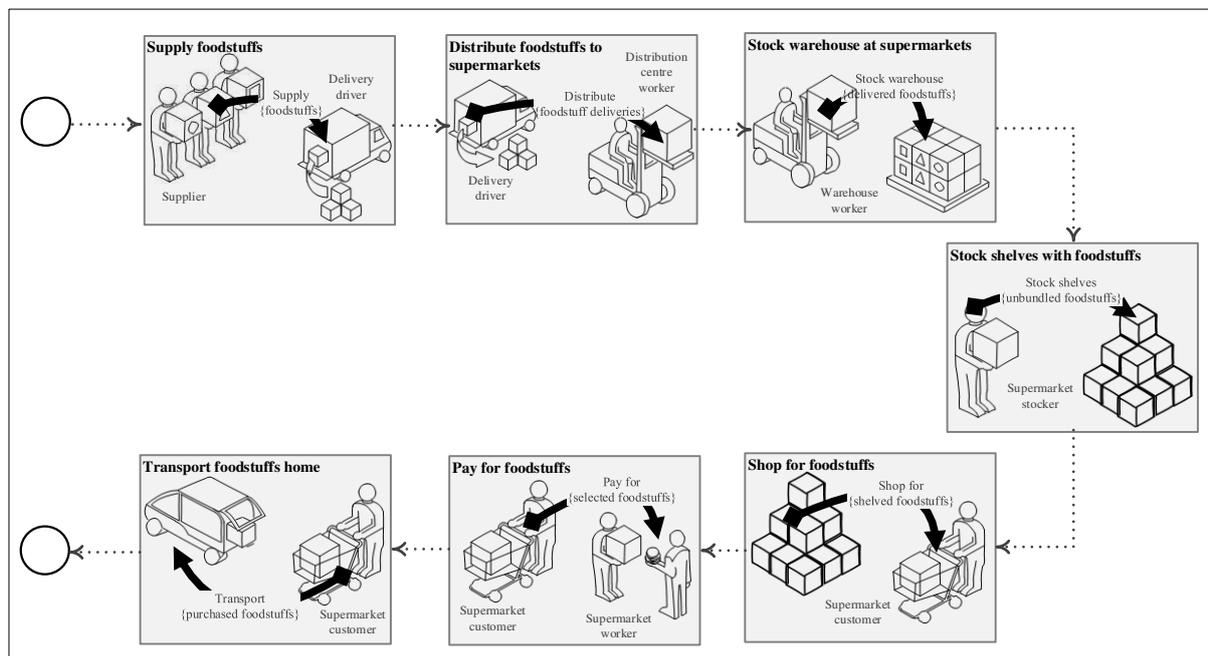


Figure 5: Coordination pattern for traditional grocery retail

Online grocery has the potential to disrupt this common retail pattern. Not surprisingly, there are clear differences between eBusiness strategies amongst the online grocery retailers. Four business patterns dominate – stock from store, stock from warehouse, stock from dark stores and click and collect.

Tesco, until recently adopted solely a stock from store business pattern in support of its online grocery operations. Grocery sales made online through the web-site are available to customers for delivery within a defined range of selected supermarket stores. Goods for each customer are hand-picked from goods held within each store by supermarket operatives. The goods are crated and placed within delivery vans which deliver to the local area from the supermarket concerned.

The stock from store pattern was an easy eCommerce strategy to develop for Tesco as an initial bricks and mortar company making the transition to a clicks and mortar company. This was because it allowed rapid expansion with limited investment in terms of changes to established operating patterns such as logistics. However, this pattern does suffer from problems such as customers experiencing a high level of substitutions when stock becomes unavailable within nominated supermarket stores.

The online food retailer Ocado has always adopted a stock from warehouse business pattern. The advantage of this pattern is that no investment in offline presence is needed. The retailer need only operate delivery from large and strategically places warehouses. This reduces base operating costs. A high-level coordination pattern for the eBusiness model stock from warehouse is provided in figure 6.

In response to this competitive environment and the increasing business being done in online grocery, Tesco has recently invested in changing aspects of its online grocery strategy. In certain areas of the UK, the retailer now delivers foodstuffs to homes from so-called ‘dark stores’. The term dark store refers fundamentally to a business pattern in which a retail outlet or distribution centre operates exclusively for online shopping.

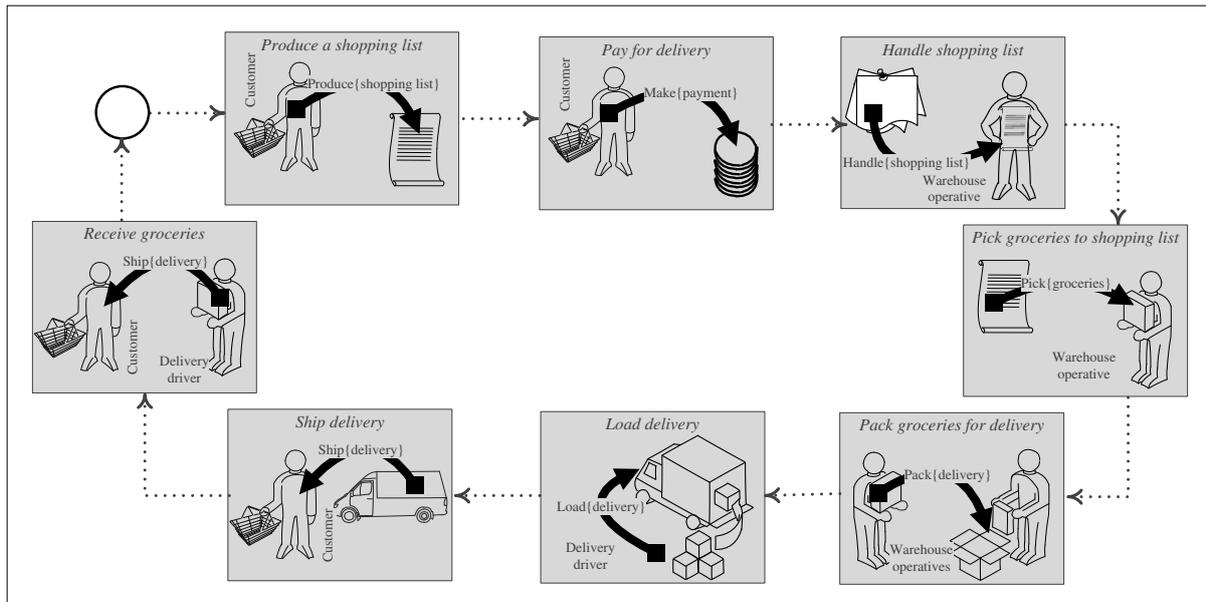


Figure 6: Coordination pattern for stock from warehouse on-line grocery retail

It is evident that the stock from warehouse coordination pattern or the related dark store pattern are likely to be coupled with a communication pattern not dissimilar to that illustrated in figure 3. The only significant differences probably lie in the picking and packaging events within the narrative of socio-technical action. Likewise, the click and collect patterns for online grocery are unlikely to be that different from click and collect patterns for online grocery in general. Hence, the communication pattern for online grocery using a click and collect model will reuse many aspects of the online retail pattern illustrated in figure 4.

## Conclusion

The making of strategy is a notoriously difficult exercise for organisations – particularly where such strategy involves both changes to activity and changes to technology infrastructure. Within this paper we have proposed that thinking of change in terms of business patterns is a productive way of engaging with or grounding strategy-making, particularly as it concerns notions of socio-technical organisation.

Within contemporary organisations business patterns involve both human and ‘machine’ actors undertaking repetitive sequences of different types of action. Actors produce, consume and distribute value such as goods and services. This is what we mean by coordinated, instrumental action. The coordination of multiple actors engaging in such action is facilitated by communicative or informative action. In turn, where communication involves multiple actors across space and time it relies upon the articulation of data structures – particularly, the making and transformation of records.

Within this paper we have described a way of visualising business patterns as comics. Pattern comics have a number of inherent advantages as a form of representation for socio-technical organisation. The main advantage is that such visualisation can be created and read by both business and technical actors. This makes thinking about what the organisation currently does as well as what the organisation might want to do an act of co-creation: between those expert in the business concerns and those expert in technical matters. This is particularly important in areas such as eBusiness and eCommerce where strategy-making must engage with the complex coupling of business change with technology change.

Thinking of eBusiness change in terms of patterns is useful because patterns can be reused. In other words, if we can represent a business pattern then we can use such patterns as intra-organisational templates for action. Within the paper, we developed a number of high-level representations of patterns of online retail. We then showed how various strategies for online grocery adopt and adapt such patterns for a growing market sector. But we might also consider the use of patterns between as well as within organisations. Hence, patterns can also be used as inter-organisational representations of current or future action. Strategic change in the area of online grocery, for instance, does not only impact upon customer chains; it is likely to cause significant changes to supply chains.

Patterns are not only useful for thinking about reuse: they can also be used for benchmarking. We can document what we do as a domain of socio-technical organisation and compare this pattern with our competitors and/or organisations considered as conducting best practice. Hence, if we develop pattern comics for each of the alternative business models for conducting online grocery, it should be possible to use this approach to business visualisation to compare and contrast the costs and benefits between alternative business patterns. This will aid options analysis within strategic thinking.

Thinking of socio-technical domains such as eBusiness and eCommerce as business patterns therefore provides a systematic way of thinking through and managing change. This approach suggests thinking about change management in the following manner. First, think about what you currently do as a series of business patterns and document such patterns as pattern comics. Second, develop a motivation for change in terms of the documented business patterns. In other words, document not only what is wrong with current patterns but what are the priorities for change. Third, develop a number of as-if models of business patterns which address one or more motivators. Fourth, select the optimal as-if set of patterns as a to-be pattern model. Fifth, consider using the visualisation of to-be patterns as a guide for implementation. Sixth, implement the changes recorded in the to-be pattern. Seventh, evaluate the pattern in action and more than likely, repeat this process of continuous business improvement.

We have been experimenting with both the idea of business patterns and the design artefacts of pattern comics in events of pedagogy and within engagement with organisations. In terms of teaching we have found visualising socio-technical change in terms of business patterns a particularly fruitful way of imparting the principles of thinking through eBusiness and eCommerce strategy. Our engagement with organisations currently is limited to applying the approach within small-scale activities of business analysis (Beynon-Davies, 2015). Our evaluation of such exercises suggests that there is promise in this approach, but that it needs larger-scale exercises to prove the efficacy of business pattern modelling in practice.

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