# The Importance of Business Rules in the Organisational Transformation Process

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### ABSTRACT

Organisational transformation has been widely discussed and practised. Organisations tried and tested many ways of collecting requirements and planning their change programmes. In this paper we discuss the fuller role that the requirements specification stage is called to play in organisational transformation. A role that encircles an understanding of the business rules of the organisation, both written and unwritten.
We state the implications of our analysis to the infamous Business-IT gap and to all other enablers an organisation may co-opt in order to achieve successful organisational transformation.

**Keywords:** Business Rules, Requirements Specification, Business Objects, Organisational Transformation.

## 1. INTRODUCTION

Organisational Transformation is described as the process required to "cement in" the changes that occur in an organisation so that they become stable and do not deteriorate with time [1]. These changes may have an enterprise-wide or departmental scope, incremental or radical nature, operational or strategic impact, evolutionary or revolutionary character; the range of characteristics is extensive. In this paper we will be referring to the revolutionary levels of IT-enabled organisational transformation, mainly Business Process Redesign, Business Network Redesign, and Business Scope Redefinition [2].

Over the last years, organisational transformation projects have been vividly discussed and religiously applied in the business world. Often, such projects engage Information Technology (IT) as an enabler of the planned change. A wealth of methodologies, tools and techniques have been developed in order to assist the requirements specification stage; the stage in which an organisation formulates requirements. These requirements, when implemented by IT, should deliver the expected business benefits of the transformation.

More often though, IT-enabled transformation projects delivered disappointing results. Possible reasons for this have been examined and discussed by many. The purpose of this paper however, is to concentrate on only one of the possible causes of unsuccessful transformation projects: the possibly defective requirements specification stage that precedes the implementation. We will begin by presenting the latest thinking in business requirements analysis; that of business objects which compose business processes. Further, we will incorporate and evaluate the contribution that business rules can make and examine that value of this contribution in the requirements capture stage of an organisational transformation project.

## 2. WHAT IS A BUSINESS OBJECT?

A business object is a representation of the nature and behaviour of a real world thing or

concept in terms that are meaningful to the business. Examples of business objects include: people and the roles they play (stock clerk, head cashier), places (store, warehouse, shelf), things (cash drawer, check out lane, delivery van), and business events (sale, delivery, payment) [3]. Business objects can act as participants in business processes, because as actors they can perform the required tasks or steps that make up business processes [4]. In other words, we can represent a business process as a collection of business objects each of which exhibits the nature and behaviour of a real business thing or concept. Reengineering a business process would in effect reengineer the business objects it is composed of and vice versa.

## 3. WHY BUSINESS OBJECTS?

It is a common assertion that business uses a different vocabulary that IT. Business people talk in terms of orders, products, customers; IT people talk in terms of entities, relationships and data. Business objects therefore became popular over the last few years as the means through which business people could describe both their business and its requirements in terms that makes sense to them. These requirements could then be presented to the IT people who could develop applications that mirror their counterparts in the real world. In this sense, business people would define their business processes (reengineered or otherwise) in terms of objects which IT people could subsequently develop into software with the means of object-oriented technology.

## 4. THE PROBLEMS WITH BUSINESS OBJECTS

From the above, it may seem that business objects should be the ultimate solution for the IT people when gathering requirements of systems from the business people. No more any vague, wrong or incomplete requirements, but real requests that both business and IT people can understand. And in many cases, this has been achieved; requirements have been defined and successfully delivered. However, the resulting systems, although fully meeting the requirements as specified, are short of delivering real business benefits (in terms of profitability, customer satisfaction, cycle times, etc.).

Is the requirement specification process at fault? Is this new vocabulary of business objects inefficient? Or, is there a more inherent reason which causes well defined and structured projects to disappoint when completed? We argue that there is such an inherent reason: the role that business rules play in the organisational transformation.

## 5. THE ROLE OF BUSINESS RULES

Business gurus have long been emphasising the human factor in any organisational transformation exercise. It is considered essential to create such a culture within an organisation in which people will participate in the transformation (by providing information on how they do things) and also accept and happily implement the transformation. It has also been emphasised that we should question the reasoning behind any activity people do within the business process in order to identify assumptions that are no longer valid and should be reengineered.

Business rules, written or unwritten, are the way that activity in the organisation is constrained. These rules can take the form of policy, procedures, standards, responsibility levels, authorisation and delegation mechanisms [5]. They are rules which, if logical, can cause behavioural barriers to change for the people of any organisation. These barriers are only removed when the 'logic' behind the rules is identified and removed [6].

Examining the business rules is a most difficult and time consuming undertaking if it is to be examined in depth, and there is a strong temptation to collect only the written rules (i.e. standards, policy, procedures, etc.). The unwritten ones though are equally important and may become the deciding factor between an unsuccessful, moderately successful and successful transformation.

## 6. AN EXAMPLE OF THE IMPORTANCE OF BUSINESS RULES

We chose to use as an illustration, a business concept that most people would be familiar with: the 'invoicing' stage in a business cycle of events.

Consider a company XYZ with the business purpose to provide a good to its customers (the same considerations apply for a company that provides a service to its customers). The core
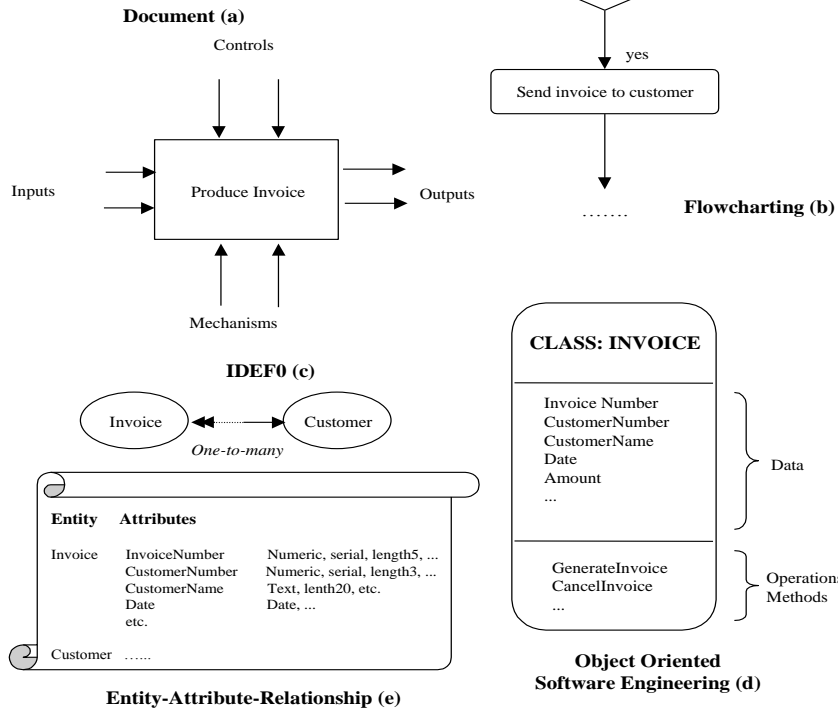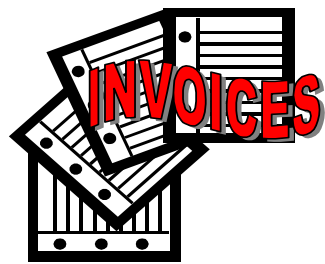
**Document (a)**

Controls

Inputs → Produce Invoice → Outputs

Mechanisms

**IDEF0 (c)**

Invoice ↔ Customer
*One-to-many*

| Entity | Attributes | |
|--------|-----------|---|
| Invoice | InvoiceNumber | Numeric, serial, length5, ... |
| | CustomerNumber | Numeric, serial, length3, ... |
| | CustomerName | Text, lenth20, etc. |
| | Date | Date, ... |
| | etc. | |
| Customer | ...... | |

**Entity-Attribute-Relationship (e)**

Order complete? — no → ...
↓ yes
Produce Invoice
↓
Invoice matches delivery note? — no → ...
↓ yes
Send invoice to customer
↓
.......

**Flowcharting (b)**

**CLASS: INVOICE**

Invoice Number
CustomerNumber
CustomerName
Date
Amount
...
} Data

GenerateInvoice
CancelInvoice
...
} Operations/ Methods

**Object Oriented
Software Engineering (d)**

**Figure 1** Alternative representations of Invoicing (as a process, activity, function, entity, etc.)

activities that a person would carry out at the invoicing stage are:

Activities:
1. Check the delivery of the good(s) is completed
2. If it is, produce an invoice
3. Check that the entries on the invoice match the entries on the customer order
4. Check that the entries on the invoice match the entries on the delivery note (which accompanies the goods upon delivery to the customer)
5. Check that the delivery note is signed by the customer
6. Send the invoice to the customer.

Business Rules:
- Policy ("each order should be invoiced", etc.)
- Standards ("each invoice should be sent to the customer 3-5 days after the delivery of the goods", etc.)
- Responsibility/authorisation levels ("the person producing an invoice should initialise it", etc.)

The invoicing stage is broken down to a series of activities, some of which may or may not follow written or unwritten business rules. Both the activities and the written business rules can be identified reasonably well.

These activities could be represented in many ways (see Figure 1). These representations range from purely "business" (i.e. as documents, ICOM diagrams, etc.) to purely "IT" (i.e. objects, entity – attribute - relationship diagrams, etc.) to something in between (i.e. flowcharts, Data Flow Diagrams, etc.). However, before we start drawing up models, lets consider the possibility that other business rules exist, different than the ones already identified.

Figure 2 displays possible events that could take place when a (written) business rule is implemented. In this case, the person dealing with the invoicing cross checks that the entries on the invoice match the entries on the delivery note signed by the customer. But there may be cases where the delivery note is misplaced or lost and cannot be retrieved from the files. Or, if it is found, its entries may not match the entries on the customer order. It is also possible that even if it is found and matches the customer order, it does not carry the customer signature.

contacting the customer and/or delivery people) in order to identify at what stage the order changed. As this is a time consuming exercise, Employee B may decide to send the invoice to the customer and leave the investigation for later (if the customer complains). In general, when there is no prescribed course of action, people tend to devise their own; one that suits them and has worked in the past.

One may think that there is no need for an in-depth analysis of all possible scenarios because they rarely occur. This could be true. However, when they do occur, the possible cost they carry with them may outweigh any benefit from ignoring them in the first place. In the above example, in the case of Employee A, s/he has already lost significant time in investigating the problem that the rest of his/her work may be delayed. Or, in the case of Employee B, a customer may become annoyed if sent invoices for goods that were never delivered. Whenever this scenario occurs and action is left to

*"Before we send the invoice to a customer, we cross check that the entries on the invoice match the entries on the delivery note signed by the customer …"*
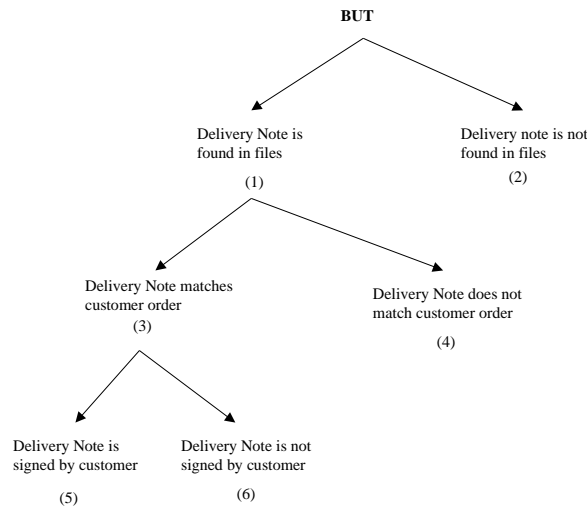


**Figure 2.** The unwritten business rules are the alternative courses of action

These and many other possibilities lead to an alternative course of action which, if not defined in terms of policy/procedures/etc., may be left to the individual's discretion (and if successful, they will become "unwritten" business rules). For example, in case (4) in Figure 2, Employee A may investigate the whole process again (by

unwritten rules, there is a high risk of increase in cycle times, decrease in quality of service provided, customer dissatisfaction, and possibly other undesired results.

We are not suggesting that companies should go ahead and standardise each conceivable

alternative of the implementation of the process. We are suggesting that unwritten business rules should be taken into account when redesigning a process, specifying requirements for an IT solution for a process, and estimating expected business benefits from any transformation exercise.

Our suggestion is to examine the unwritten rules in depth and estimate the risk the business is exposed to when they occur. Once this risk is assessed, an organisation may choose to do something for high-risk alternatives and ignore others that carry an insignificant risk. In such a case, unwritten business rules will be ignored by choice and not by accident.
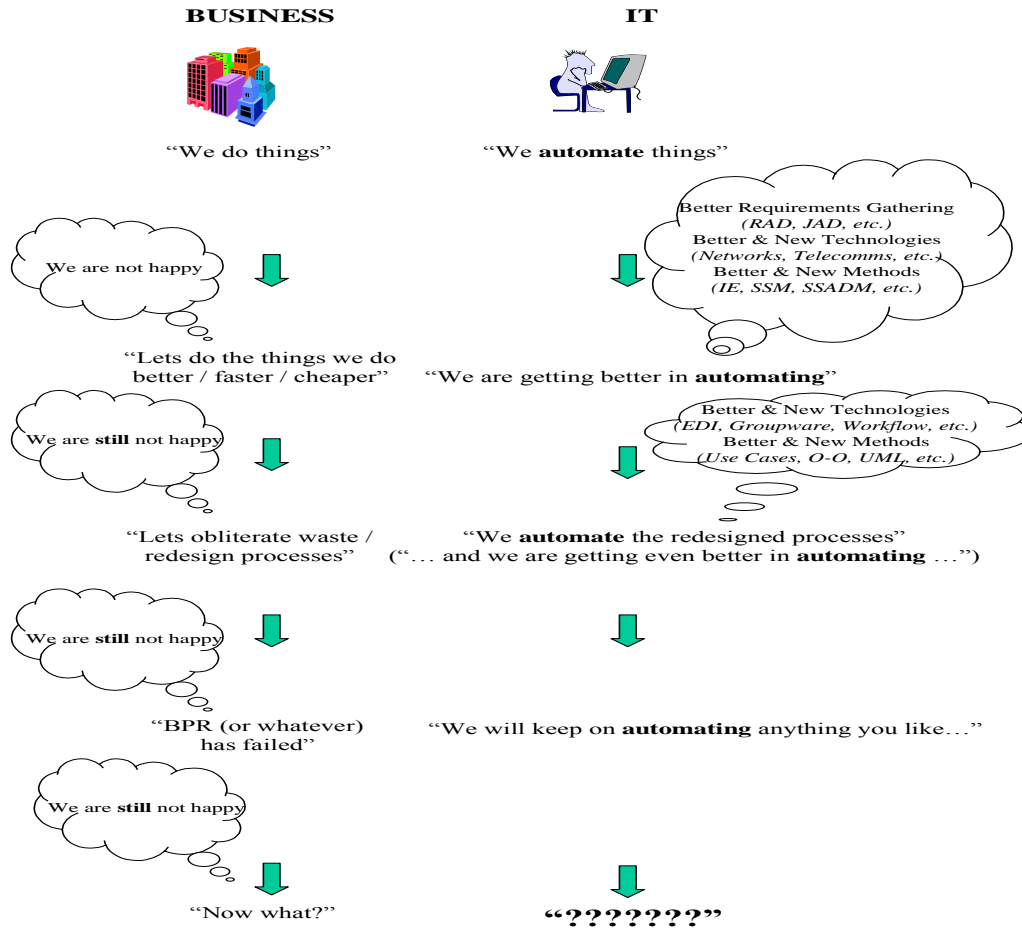
**BUSINESS**          **IT**

"We do things"          "We **automate** things"

We are not happy

Better Requirements Gathering
*(RAD, JAD, etc.)*
Better & New Technologies
*(Networks, Telecomms, etc.)*
Better & New Methods
*(IE, SSM, SSADM, etc.)*

"Lets do the things we do
better / faster / cheaper"          "We are getting better in **automating**"

We are **still** not happy

Better & New Technologies
*(EDI, Groupware, Workflow, etc.)*
Better & New Methods
*(Use Cases, O-O, UML, etc.)*

"Lets obliterate waste /
redesign processes"          "We **automate** the redesigned processes"
("… and we are getting even better in **automating** …")

We are **still** not happy

"BPR (or whatever)
has failed"          "We will keep on **automating** anything you like…"

We are **still** not happy

"Now what?"          **"???????"**

**Figure 3.** A historical representation of the Business-IT gap

In our example, if the organisation decides to use IT to automate the streamlined process, it may end up not achieving expected business benefits. If all the delivery notes are automatically sent, cross-checked, initialised and all the invoices are produced automatically and sent to the customer electronically, we still have only catered for case (5) in Figure 2. All other options – although not frequent –still leave the individual to devise a solution. Even after heavy investment in IT, Employee A will still lose valuable time trying to reconcile the paperwork, and Employee B may still upset a customer who will receive a wrong invoice.

## 7. THE IMPORTANCE OF BUSINESS RULES WHEN IDENTIFYING OBJECTS

As we mentioned in section 2, business objects are representations of the nature and behaviour of a real world thing or concept in terms that are meaningful to the business. And we emphasised that the beauty of business objects (over other representations) is that they make sense to business people. Business people can associate the invoicing process with representation (a) and possibly (b) in Figure 1  but they would have difficulty to understand representations (d) and

(e) in Figure 1, let alone to define their requirements in such notations.

The reason that even the business objects approach was not successful in delivering real business benefits is not because the requirements specification stage was at fault or because the IT people did not meet the requirements defined. We suggest that a significant factor was that the business rules were ignored when the business was modelled and requirements drafted (as in Figure 2, cases (1), (3) and (5) were fully specified and implemented but cases (2) and (4) were ignored). The business rules that were ignored were either frequent or had important implications in terms of cost, quality, cycle time, etc. when they were implemented.

A business object therefore should consist of two aspects of behaviour. The first one in terms of sequences of activities, methods and procedures to be carried out. The second one in terms of both the written business rules (standards, policies, etc.) and the unwritten business rules. Only in such cases a business object is fully defined and the requirements specification stage will be more realistic and efficient. Equally important, the system delivered to enable the transformation of the business object (or process) will be well-targeted, addressing risks and delivering the real business benefits the organisation expected to achieve.

## 8. CONCLUSION

Throughout this paper, we tried to illustrate that the identification and evaluation of business rules is an essential prerequisite for the success of an organisational transformation project. To do this, we used one enabler of an organisational transformation: Information Technology. Addressing business requirements in their totality may resolve the long-standing communication gap between business and IT (Figure 3).

Productive organisational change is not simply a matter of structure or systems alone but rather an effective relationship between structure, strategy, system, style, skills, staff, and superordinate goals (the Seven Ss) [7]. Each of these Ss is rich in both data and behaviour and, consequently, business rules.

Consequently, IT is only one of the many enablers of organisational transformation. Rethinking Porter's value chain model [8], the infrastructure of the company, the Human Resources Management (HRM) function, the procurement function, all have implications to the business strategy. They (as IT) all are equally "strategic" and are called to implement parts of an organisation-wide transformation.

Business processes consist of business rules. In organisational transformation, business processes cross functional and departmental boundaries, thus engaging all enablers to participate. Thus, business rules are equally important when specifying requirements for a new HRM, administration or procurement system and should be similarly considered.

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