

## **Abstract:**

Relentless changes and competitive pressures in the 1990s have placed new strains on organisations and made business process reengineering (BPR) a major subject of attention in academia and industry. BPR is offered as an enabler of organisational transformation, and many organisations have embraced the BPR approach for radical performance improvement. Despite the explosive growth of organisations implementing BPR projects, there has been a disappointing track record; Hall et al. estimate that between 50% & 70% of the firms fail to capture the 'dramatic' gains from BPR. There are three major challenges currently being faced by all BPR projects.

First, existing business processes have to be understood to enable the BPR team to identify the potential problem areas before creating a new process or redesigning the existing ones. Most BPR methodologies rely on labour intensive and long drawn-out approaches for capturing and modelling existing business processes.

Second, many process modelling formalisms originate from the IS application development perspective and lack a diagnostic mechanism. Thus, after the current processes are modelled, the question of how to redesign them still remains unanswered.

Third, it has been observed that IT capabilities (e.g. networking, shared databases etc.) may or may not be a part of the redesigned process. This defeats the purpose of reengineering, which intends to have IT as the enabler.

The above reasons prompted the need for a more structured methodology to arrive at a reengineered process. This dissertation is an exploratory attempt at outlining such a methodology so that any reengineering exercise can have a more systematic approach, with IT capabilities automatically occupying a more central role. This methodology deals with information-intensive business processes. It bases its redesign on the artifacts produced in the existing process. The advantages of an artifact based methodology are (i) artifacts provide the maximum external interface to the process in an information-intensive process, (ii) the bias of the existing functional setup on the 'to-be' process is much less vis-à-vis that of an activity based methodology, and (iii) limited time and effort is spent in understanding the existing process.

The methodology considers artifacts, activities, agents, and resources to be the essential components of any process model. The existing process is modelled in the form of the artifacts being currently produced in the process and their life cycle models. The process of reengineering is based on the redesign of these artifacts and the alteration of their existing life cycle models. The redesign of artifacts results in elimination and merging of artifacts. The alteration of their life cycle models are based on the change in the circulation and acceptance

procedures of the artifacts due to the advancement in the capabilities of information technology e.g. shared databases and networking. The redesigned artifacts and their altered life cycle models form the basis of the 'to-be' process and are used to work backwards to integrate every artifact and its life cycle model with the activities, the agents, and the resources that produce it. An object model of the information system is simultaneously obtained with the 'to-be' process model. This enables a smooth transition from business process design to information systems design.

The methodology developed, is validated by applying it to the case of a procurement process of an organisation producing consumer electronics. The parameters used for comparing the simulated existing process and the 'to-be' process are cycle time and human effort involved. The application of the methodology causes an improvement of 75% in cycle time and a saving of 43.5% in the required human effort.