A business process outsourcing framework based on business process management and knowledge management

E. Mahmoodzadeh
IEI Company, Tehran, Iran

Sh. Jalalinia
Enterprise Architecture Center, Isiran Company, Tehran, Iran, and

F. Nekui Yazdi
R&D Center, Isiran Company, Tehran, Iran

Abstract

Purpose – Nowadays, outsourcing has proved to be an enterprise management strategy in the face of globalization and growing competition. The decision to outsource a business process for any organization has far-reaching consequences and risks. The purpose of this paper is to analyse the impact of business process management (BPM) and knowledge management (KM) on reduction of outsourcing risks and pitfalls.

Design/methodology/approach – Outsourcing models and frameworks are reviewed to find the main risks in outsourcing. One of the most important groups of risks is emergent KM issues arising from widespread outsourcing. A strategic KM approach can reduce this risk. Communication and coordination difficulties between outsourcing partners is another group of risks that could be decreased by using the BPM approach in organizations. Then the contribution of a business process outsourcing (BPO) framework based on BPM and KM lifecycles is tested.

Findings – The paper finds that BPM and KM could reduce risks of outsourcing and enable a BPO lifecycle.

Practical implications – A contemporary case of IEI Company's outsourcing practices with one of its subsidiaries, Irancell, is discussed as an illustrative example.

Originality/value – The paper demystifies BPM and KM could enable BPO via coordinating BPM, KM, and BPO lifecycles.

Keywords Outsourcing, Process management, Knowledge management

Paper type Literature review

1. Introduction

Nowadays with increasing competitive pressures and progressing globalization, firms have to reduce their costs and build new opportunities via optimized using of internal and external resources. Internalization forces firms to bind resources to a course of action, which may restrict flexibility and be hard to retreat (Leiblein *et al.*, 2002). Also, internalization may be required to more effectively production. The difficulty of these decisions has worsened in recent years stimulated by raised competitive pressures, the acceleration of technological change, and the distribution of knowledge across various organizations and geographic markets (Hoetker, 2005). The outsourcing may be either tactical or strategic. Strategic outsourcing looks for overall business improvement and

www.man

competitive advantages rather than simple cutting costs; therefore, a company could attain its strategic goals by focusing on central activities to organizational success. Tactical outsourcing has a short-term focus on minimizing operational costs or maximizing daily operations productivity (Murphy, 2004).

Outsourcing has three evident types since it first developed:

(1) manufacturing outsourcing;

(2) information technology (IT) outsourcing; and

(3) business process outsourcing (BPO).

Manufacturing outsourcing, as in the Boeing Company, is the production of a part, component part, or service. IT outsourcing involves the outsourcing of IT resources such as data centers and different IT processes such as application development and network management (Beasley *et al.*, 2004). The latest kind of outsourcing is BPO, in which the service provider takes responsibility for a whole business process, such as financial management or human resource management (Amega Group, 2003). Last type of outsourcing helped popularize the concept of outsourcing beyond the industrial boundaries. We will focus on this type of outsourcing in this paper.

This paper illustrates the result of a research project, which has been done to achieve better consequences of Irancell BPO. First step of this project included a literature review on the works of other researchers and classifying probable risks and pitfalls of outsourcing, which could reduce the chance of successfulness. Next, we reviewed the solutions, which have been contributed to decrease the risks and pitfalls by other investigators. Finally, the strengths of solutions have been used to outsource Irancell business processes, and our framework has been contributed to compensate deficiencies of reviewed solutions. Therefore, literature review section is divided into two parts: outsourcing risks and pitfalls; outsourcing models and frameworks.

We will review the risks of outsourcing and accepted outsourcing models and frameworks in Section 2 of this paper. Impact of using business process management (BPM) approach to reduce the communication and coordination outsourcing problems will be considered in Section 3. Role of knowledge management (KM) as an outsourcing enabler will be described in Section 4. Our suggested outsourcing framework based on BPM and KM will be explained in Section 5 and consequently our experience in using the framework will be discussed as a case study in Section 6.

2. Literature review

To review the former literature on the topic, several web sites and journals such as Elsevier, IEEE, ScienceDirect, SSRN, and Emerald have been searched. The reviewed papers were mostly published between 2000 since 2008. The keywords used in literature review were BPO, outsourcing risks and pitfalls, outsourcing framework, outsourcing methodology, outsourcing and KM, outsourcing and BPM, process-oriented KM, and KM and BPM.

2.1 Outsourcing risks and pitfalls

Outsourcing is known as a potential source of competitiveness and value creation via decreasing costs, scaling without mass, disruptive innovation, and strategic repositioning. While evaluating the outsourcing potentials in a firm, it is important to notice the outsourcing risks and pitfalls (Leavy, 2004).

www.man

Aron *et al.* (2005) have noticed three kinds of risks in outsourcing:

(1) *Operational risks.* Decline on quality, cost, or speed of process execution.

(2) *Strategic risks.* Such as protection of intellectual assets, security, and privacy problems.

(3) *Composite risks.* Long-term risks, such as losing the proficiency to perform such business processes internal in the future because of lacking knowledge of the business processes.

Also, Gewald and Hinz (2004) introduced a framework to classify and decompose operational risk in outsourcing in a way that generates risk indicators.

According to Quelin and Duhamel (2003), Prasad (2009), Gilley and Rasheed (2000), Lewin and Johnson (1996), Kakabadse and Kakabadse (2002) and Frost (2005) some of the most important outsourcing risks and pitfalls are known as follows:

· dependency on the suppliers (Risk 1 represented in Table I);

· ignore hidden costs;

· losing touch with new technological opportunities for product and process innovations (Risk 2 represented in Table I);

· loss of long-run research and development competitiveness;

· the risk of changing collaborative to opportunistic behavior of the supplier with a dishonest supplier which, accessing to knowledge concerning a firm and its products;

· the degradation of a product or service because the supplier's lack of necessary capabilities or less attention;

· communication and coordination problems (Risk 3 represented in Table I); and

· cognitive distance between suppliers and firm therefore makes it more difficult to align decisions and exchange knowledge (Risk 4 represented in Table I).

Also, Padovani and Young (2006) have contributed two frameworks that can be useful for assessing the nature of the risk of potentially outsourcing and managing risks. Another model for explaining reasons of outsourcing failure has represented by Hecker and Kohleick (2006). Also, Baithelemy (2003) has demystified seven deadly sins of outsourcing in his paper:

(1) outsourcing functions that should not be outsourced;

(2) select an inappropriate supplier;

(3) a poor contract;

(4) overlooking human resource problems;

(5) decreasing control over the outsourced functions;

(6) ignoring the indistinct costs of outsourcing; and

(7) lack of exit strategic plan.

He also has explained causes of each sin and provided substantial suggestions to manage the risks.

As a result, above risks and pitfalls are considered in our suggested BPO framework (Table I).

BPO	BPM services	KM services
Lifecycle		
(1) Definition of core competences and strategic direction of BPO (Momme, 2002; de Boer *et al.* 2006)	The strategic analysis in BPR or BPI phase of BPM can be used for strategic plan of BPO	According to Zack knowledge framework (Gottschalk, 2005), external and internal competencies could be discovered and its results can help organization to define the strategic direction of BPO
(2) Model and evaluate current business processes and design BPO plan (Click and Duening, 2005)	Process definition/modification is the basic step in BPM (Jung *et al.*, 2006)	Process model can extract from KMS as process template knowledge (Jung *et al.*, 2006)
(3) Model and assess the BPO consequences before implementation (Click and Duening, 2005)	Static analysis and simulation is an important phase in BPM that can be useful to evaluate the BPO results (Jung *et al.*, 2006; Chang, 2006)	
(4) Implementing BPO program (Click and Duening, 2005)	Because of process standardization in BPM, collaborating with partners and implementing the BPO program will be performed easily (Wüllenweber *et al.*, 2008; Grefen *et al.*, 2003; Grefen *et al.*, 2006)	
(5) Measure BPO metrics (Kannan, 2008)	BPO metrics could be defined as key performance indicators of business processes in BPM and the key performance indicators will be measured accurately via BPMS	
(6) Evaluate results and improvement (Kannan, 2008; Jackson *et al.*, 2001)	Post analysis phase in BPM lifecycle could be useful to evaluate BPO results (Jung *et al.*, 2006)	History analysis of process-related knowledge could help to improve processes (Jung *et al.*, 2006)
Risks and pitfalls		
(1) Dependency on the suppliers and changing collaborative to opportunistic behavior of the supplier		Managing explicit and tacit knowledge of external suppliers can reduce the risk of dependency on suppliers and keeping touch with new technologies
(2) Losing touch with new technological opportunities for product and process innovations		
(3) Communication and coordination problems	Because of process standardization in BPM and using SOA in BPMS, communication and coordination with partners will be easier in value chain (Chang, 2006)	

Table I.
BPM and KM services to perform BPO lifecycle and risk management

(*continued*)

BPO	BPM services	KM services
(4) Cognitive distance between suppliers and firm therefore makes it more difficult to align decisions and exchange knowledge	An integrated KMS and BPMS could facilitate information and knowledge sharing in the partner's network (Jung *et al.*, 2006)	
(5) Outsourcing functions that should not be outsourced		According to resource-based theory (Gottschalk, 2005), functions needing firm's strategic knowledge and ones in which firm is good enough (Frost, 2005), should not be outsourced
(6) Decreasing control over the outsourced functions	BPM enables firms to control and monitor business processes across the value chain (Chang, 2006; Grefen *et al.*, 2003; Elhadad *et al.*, 2008)	A process-oriented KM system could enable firms to gather and analyse data from suppliers and customers (Jung *et al.*, 2006)

Table I.

2.2 Outsourcing models and frameworks

Since now many models and frameworks have been contributed that enable companies to manage risks and avoid the decision making and implementation pitfalls of outsourcing.

Momme (2002) reviewed some accepted outsourcing models and lifecycles and proposed a strategic framework for outsourcing manufacturing. His framework contains six generic steps:

(1) Competence analysis.

(2) Assessment and approval.

(3) Contract negotiation.

(4) Project execution and transfer.

(5) Managing relationship.

(6) Contract termination.

Momme defined key activities with related performance indicators and expected output for each of the phases. He recommended some measures for a successful outsourcing:

· to know how to identify, exploit and protect our core business;

· to retain or insource our core business functions that we are good enough to do them;

· to outsource functions in which suppliers have a distinct comparative advantage;

· to use outsourcing proactively through a stronger focus on internal core business areas, as a way to improve manufacturing performance, generate employee commitment, and consequently increase competitiveness;

- to create a culture in the organization that enhances the core business and recognizes the incentives of outsourcing non-core competence areas;
- to integrate our sourcing decisions with the strategic planning process;
- implementation a management system to determine the criticality of supplied products or services;
- to assign resources for training employees and investments in necessary technology;
- to provide information and process technology effectively supporting our extended enterprise; and
- an outsourcing framework model linking the critical phases and depicts the cross-functional workflow interfaces of the outsourcing process.

Momme's efforts to represent a method of outsourcing and useful guidelines are substantial; however, he has not explained how information and process technology should be used to effectively support extended enterprises.

de Boer *et al.* (2006) has argued a prescriptive model providing some guidelines in decision making and implementing processes of outsourcing. They have provided a good literature review on existing decision models for outsourcing and have compared them. They extracted the common steps of outsourcing in three steps:

(1) Definition of core competences and strategy.

(2) Assessment of integral costs.

(3) Analysis of suppliers and competitors.

Consequently, they demonstrated a practical approach by a case study based on satisficing concept. Nevertheless, de Boer has focused on strategy of outsourcing and not argued the enablers of outsourcing.

Holcomb and Hitt (2007)) have proposed a model of strategic outsourcing based on extending transaction cost theory (TCT) and resource-based view (RBV). TCT in outsourcing has been the prevailing way to explain outsourcing as an economizing approach by allocating transactions to different suppliers. Nowadays, RBV has been known as an approach that could examine the role of specialized capabilities as a potential source of value creation in relationships between firms.

Gilbert *et al.* (2006) have explained the strategic role of outsourcing in reducing competitive pressure to decrease manufacturing costs between original equipment manufacturers (OEMs) that produce partially substitutable products. They represent that in such environments; the cost-reduction opportunities may cause to increase competition between the OEMs. They have shown that current theories would not be useful when product substitutability is high and there are no cost-reduction opportunities.

Click and Duening (2005)) reviewed the trend of BPO and explained the main steps of BPO in their book. They claimed that each step of their suggested method helps organizations to align the BPO decision making to their business strategy:

(1) Establish a BPO analyser team.

(2) Survey current state of business processes.

(3) Determine core and none core functions.

(4) Discover BPO opportunities.

(5) Model the BPO hard and soft results before implementing.

(6) Develop and present the business plan of BPO.

Kannan (2008) the CEO of Ajira company, suggested a framework for BPO measurement. He categorized the metrics of BPO in three main areas: people, technology, and process. He also offered a process for evaluating BPO based on experiences of his company. In his represented methodology, metrics should be identified and documented at first. Second, key inputs, processing and output metrics should be determined. Then, process, people, and technology metrics should be prioritize. After monitoring and analysis cyclicity regulation, roles, and responsibilities will be assigned.

Meland and Straume (2007) have analysed the strategic consequences of *ex post* outsourcing when firms' competition causes improperly challenges for profit. They have pointed out that in such outsourcing cases, winner supplier's expectation raised to attain more outsourcing rent instead of increase competition, while horizontal outsourcing is often thought to assist conspiracy.

Booz Allen (Jackson *et al.*, 2001) has developed a framework that enables companies to avoid the decision making and implementation risks and pitfalls of strategic outsourcing and attain a better result of their own capabilities. Also, he has recommended useful guidelines for organizations to manage the new supply relationships. The Booz Allen framework includes six main steps:

(1) Evaluate functions and identify strategic priority and risk.

(2) Market considerations.

(3) Internal versus external capabilities analysis.

(4) Economic evaluation.

(5) Ability to manage the supplier.

(6) Ability to manage new processes.

All things considered, most of the reviewed frameworks and methods have emphasized that enterprises should analyse the strategic effects of outsourcing and hold their core functions as core competency. However, nowadays, with increasing globalization it is very difficult to recognize what core business processes are. Therefore, the most significant challenge is that how the risks of strategic outsourcing could be reduced, and which new technologies could enable outsourcing process.

3. BPM and outsourcing

Increasingly, organizations are focusing on a few business processes in which they are good enough, and the others, which a company does not have core competence to perform, are most likely to be outsourced. In this way, outsourcing the customer care, logistics, human resources, and accounting processes are expanding. Therefore, not only does the management of business process not stop at the bound of the organizations, but also it should be extended to the suppliers' areas.

While the outsourcing claims business impact and opportunity, it also represents new management and organization challenges. One of the most important challenges is coordination and management of outsourced business processes with internal business

processes and integrating information between them. For business processes coordination across the organization value chain, we need an approach to standardize the definitions and exchanging protocols in data and process areas. Process standardization contains general definitions of metrics, common languages enabling organizations to gain the integrity of business rules, process logic, and data. Impact of process standardization on BPO success is surveyed by Wüllenweber *et al.* (2008). BPM as "a systemic, structured approach to analyse, improve, control, and manage processes with the aim of improving the quality of products and services" (Elzinga *et al.*, 1995), enables organizations to standardize their business processes and increase the capability of integration. Chang (2006) have explained the concept, standards and trend of BPM systems in his book. According to Chang, the concept of BPM as a management approach, has raised in the mid-1990s, and there is no accepted definition of BPM since now. He summarized different proposed BPM concepts in BPM principles and practices. One of the most important practices mentioned in summery of Chang's book is *Collaborative with Business Partners*. Firms outsourcing processes of production have a very close collaboration with their suppliers. A supplier might have to participate in the product design, order fulfillment and inventory management processes. Also, firms might have to collaborate with other companies because of the added value created for the customers.

Traditionally, business processes are enacted manually and managed by the knowledge of the enterprise's personnel. However, enterprises can achieve more benefits if they use software systems for coordinating the business processes. These software systems are called BPM systems. Nowadays, most of BPM systems have service-oriented architecture. Service-oriented computing is one of the major trends both in business engineering and software technology. The main idea of service orientation is to capture business relevant functionality as a service and provide sufficiently detailed information so that customers can use it. This definition of service orientation goes well-beyond services that are realized by software systems (Weske, 2007).

Outsourcing is ideal for cases where there are well-defined business processes that could easily be outsourced to resources offshore. Service-oriented infrastructure has an important role in improving BPO. For example, each task could be communicated instantaneously via a web services invocation to the supplier. The supplier can reply asynchronously to the requestor with details of the completion time. In other words, a virtual enterprise could be created between service requestor and provider while using the service-oriented communication and messaging infrastructure. By using a proper service-oriented business process management system (BPMS), it is possible to involve internal requestor processes and service provider processes and to be able to check the status at any point in the overall virtual process involving multiple participating enterprises (Khoshafian, 2007).

According to Grefen *et al.* (2003) service outsourcing is the business paradigm in enterprises which some of their business processes are performed by a service provider. Service outsourcing can be performed just when both outsourcing and actual enactment of the service is implemented by means of an automated process and data management infrastructure. Service outsourcing includes a number of steps: services have to be identified and defined, compatible business partners have to be found in an efficient way, process enactment and data management infrastructures have to be set up and coupled, and the process has to be actually enacted. To do this, clear process

specifications are necessary that describes process structures and the process-relevant data structures for the mentioned steps. The process specifications should be shared between service consumer and service providers and should allow for service brokering between partners when setting up a virtual enterprise on the one hand, and service enactment in a running virtual enterprise on the other hand. Brokering is used to relate service consumers and providers through simple matching of specification characteristics or through more advanced matchmaking. In addition, Grefen *et al.* (2006) have studied web services support for the dynamic process outsourcing They have explained contract-based outsourcing to define requirements, introduce the web services framework and investigate the match between the two. Their pragmatic research consequence is substantial to refine the web services framework and BPMS in order to supporting BPO (Figure 1).

Also, Elhadad *et al.* (2008) have explained how BPM approach and web services could help enterprises facilitate BPO. They have presented a comprehensive approach that consists of both architecture and methodology for model-based business process orchestration. They have designed a semantic repository of business processes and web services. All components of the system rely on the repository. Their portal was developed to support the entire development process, give access to a set of semantically enhanced modeling tools and to external resources such as a BPEL engine. The modeling tools include an organization modeling tool, a data modeling tool based on the ebXML core components method, a business process modeling tool based on the standard BPM notation, and a preference modeling tool for modeling non-functional requirements and preferences among them.

Consequently, in accord with mentioned researches, information sharing, and process integrating via BPM approach are necessary factors to success BPO.

4. KM and outsourcing

With the ever growing interest for outsourcing, organizations should have closer collaboration with their partners and their success depends on successful interaction of various teams and stakeholders based in different locations. Information and
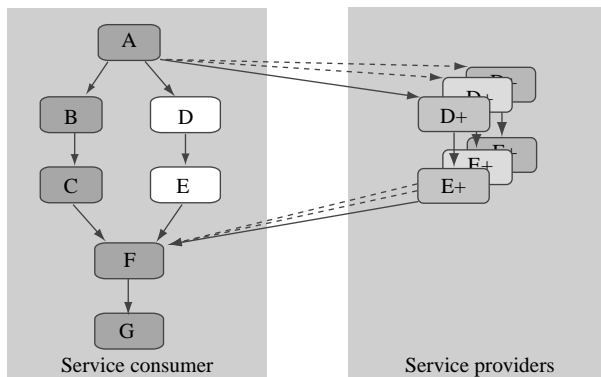
Source: Grefen *et al.* (2006)

knowledge transferring and sharing without direct interaction among the concerned participants are necessary to have a successful partner's cooperation (Seshasai *et al.*, 2004). On one hand, knowledge sharing beyond one's organizational boundary in an extended network of participants will be inevitable. On the other hand, versus of organization's resistance to keep core competencies and their own knowledge, there are many retaining, utilizing and creating knowledge problems arising from extending the scope of outsourcing in firms (Zhao *et al.*, 2004). The risk of loss of strategic information coupled with the threat of opportunistic behavior by another partners is a strategic challenge of outsourcing. The resource-based theory of the firm holds that, in order to generate sustainable competitive advantage, a resource must provide economic value and must be presently scarce, difficult to imitate, non-substitutable, and not readily obtainable in factor markets. Knowledge is an intangible resource for organization that could be as a strategic resource. Therefore, it is necessary using an intelligent KM system to manage the firm's knowledge as a strategic resource versus the threat of loss of strategic information (Gottschalk, 2005).

Bandyopadhyay and Pathak (2007) have investigated the effects of knowledge issues in success of outsourcing projects. They have argued that when a firm outsources in order to benefit from a set of complementary skills, the firm's management will have to be involved not only in the negotiation of the outsourcing contract, but also in methods of operation and interaction between the two firms. Since the employees of the two firms would probably be mutually antipathetic, the management would have to establish the rules, forcing people to share each other's knowledge. They point out that firms outsourcing their knowledge-based processes for a quick return on investment might be in for a rude shock. There are significant management challenges that need to be addressed. If the degree of complementarily of knowledge between the firms is low, the results might not be this prescriptive. When the knowledge of the two employees are similar enough, sharing does not lead to a significant increase in each other's knowledge, but comes with its associated costs and this is especially dire when much of the time in the meetings might be spent in determining the exact knowledge which is dissimilar between the employees (and therefore worth sharing). Thus, forcing a higher level of cooperation would add to the costs but not deliver commensurate benefits.

A significant critical success factor in BPO is KM. The outsourcing promise is to leverage the supplier's superior technical know-how (human capital), superior management practices (structural capital), economies of scale, and increasingly, access to strategic and business advice. This should enable the client to refocus on strategic, core capability and knowledge areas (Gottschalk, 2006).

As a result, KM, as a branch of general management disciplines, can help organizations to manage and reduce mentioned risk of knowledge publishing, as a strategic risk of outsourcing.

5. BPO framework based on BPM and KM
In this section, a comprehensive framework for BPO based on BPM and KM is discussed. Our framework demonstrates services that BPM and KM provide to help performing each step of BPO lifecycle and reducing BPO risks and pitfalls. According to Jung *et al.* (2006) the relations between KM and BPM are explained. Also, they

explained BPM lifecycle of integrated process management and Nissens's KM lifecycle used in our framework. They reviewed requirements of each stage of BPM and KM lifecycles and explained the interrelationship between them (Figure 2). We used the results of their work in our framework and we have explained just BPM and KM impacts on performing BPO lifecycle and risk management in this paper (Table I). The following BPO lifecycle is extracted from literature review and our practice in Irancell case study, as we shall see:

(1) definition of core competences and strategic direction of BPO (Momme, 2002; de Boer *et al.*, 2006);

(2) model and evaluate current business processes and design BPO plan (Click and Duening, 2005);

(3) model and assess the BPO consequences before implementation (Click and Duening, 2005);

(4) implementing BPO program (Click and Duening, 2005);

(5) measure BPO metrics (Kannan, 2008); and

(6) evaluate results and improvement (Jackson *et al.*, 2001; Kannan, 2008).
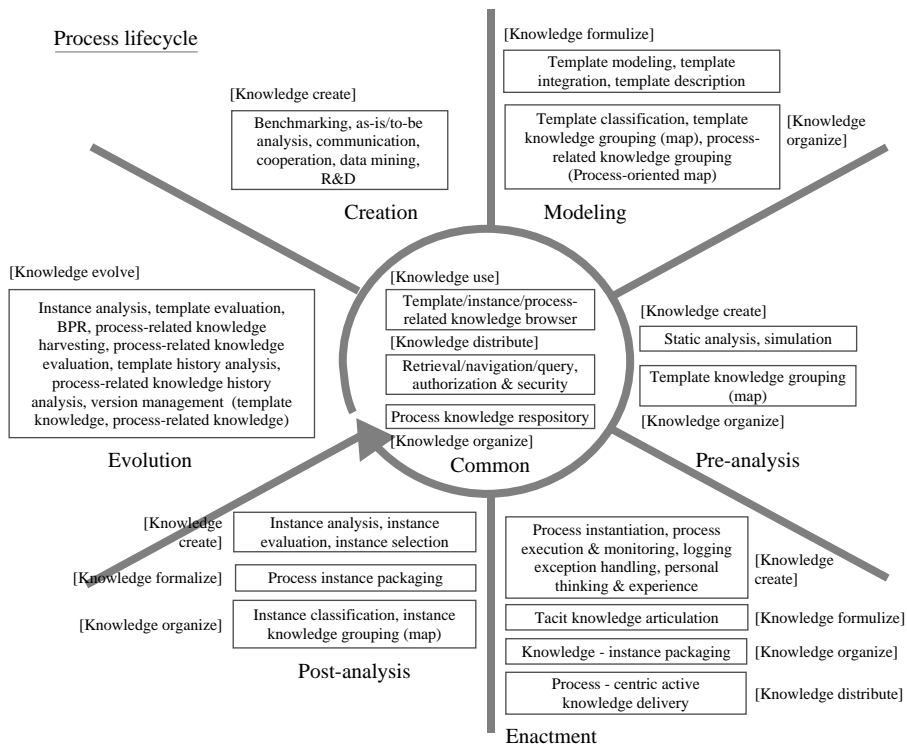
Source: Gottschalk (2006)

Figure 2.
Interrelationship between
BPM and KM

As Jung *et al.* (2006) have pointed out in their paper, BPM lifecycle includes six main steps (Figure 3):

(1) Creation.
(2) Modeling.
(3) Pre-analysis.
(4) Enactment.
(5) Post-analysis.
(6) Evolution.

They have also argued the KM lifecycle as follows:

· knowledge creation;
· knowledge formulization;
· knowledge organization;
· knowledge distribution;
· using knowledge; and
· knowledge evolution.

In addition, in Figure 2, it is described how KM steps have been followed in each step of BPM lifecycle.

A conceptual view of proposed BPO framework is represented in Figure 4. In the proposed framework, the steps of BPO and BPM lifecycles should follow synchronously. To put it simply at the first step of BPM lifecycle, the business processes should be surveyed, and strategic studies of BPO should be analysed simultaneously. In this step, the process-related knowledge would be created. Second, the BPO plan should be designed when the current business processes are modeled; also, specification of business processes are defined in accord with BPM standards. The process-oriented knowledge will be formulized and organized in this stage. Third, in pre-analysis and process simulation step of BPM lifecycle, information needed to assess the BPO consequences before implementation will be produced. The knowledge of static analysis will be created, and the template knowledge will be organized in this
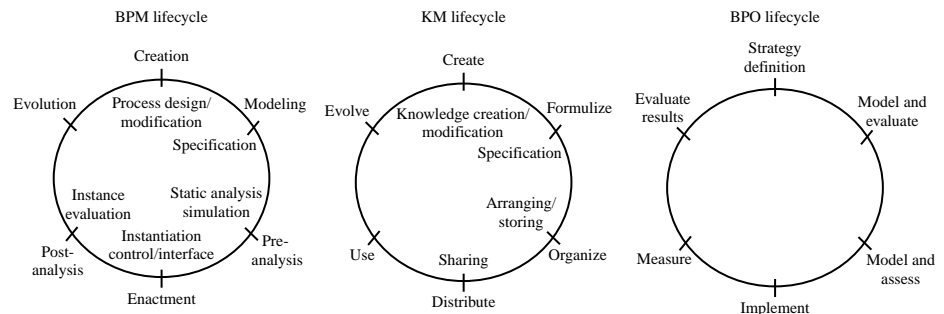

Figure 3.
BPM lifecycle and KM and BPO lifecycles
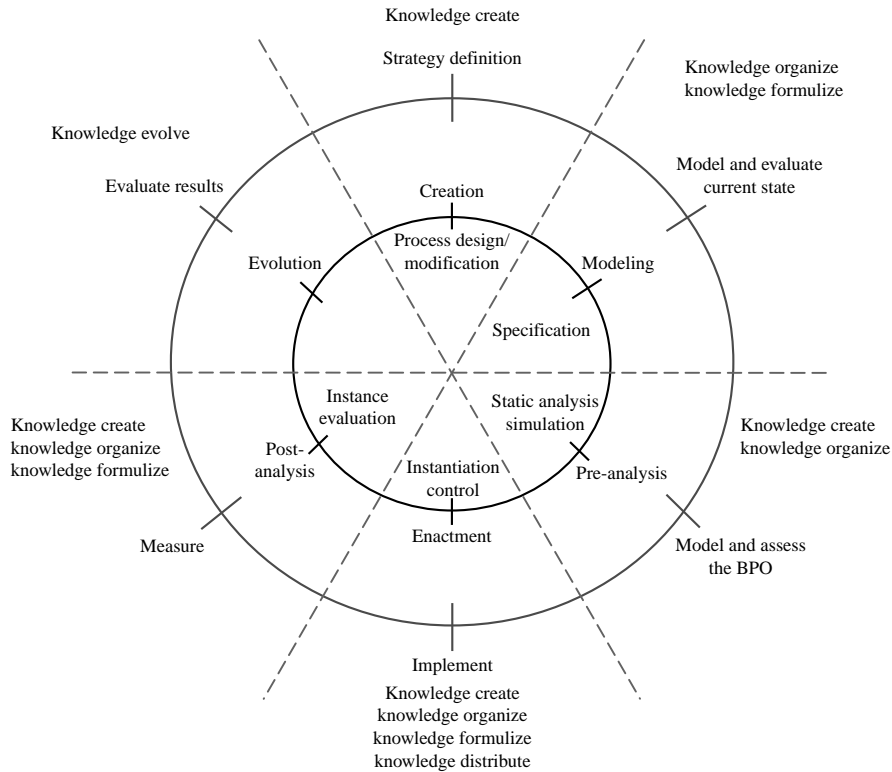
Source: Jung *et al*. (2006)

Figure 4.
BPO framework based on
BPM and KM

phase. Fourth, the business processes, remodeled to be outsourced, will be enacted. In this step the knowledge, related to process instantiation, execution, monitoring and control will be created; tacit knowledge will be formulized; knowledge of process instances will be organized; process centric active knowledge will be distributed. Then in post analysis stage of BPM, the performance indicator of BPO project will be measured; also, knowledge of process evaluation will be created; the process instance classification knowledge will be organized and formulized. Finally, in evolution step of BPM, results of BPO will be assessed, and outsourced business processes will be improved based on outcomes of BPO assessment.

6. Case study
6.1 MTN Irancell company
MTN Irancell is a private joint stock company governed by the Commercial Code of the Islamic Republic of Iran and the provisions of its Articles of Association. The Company has been established for an indefinite period of time. MTN Irancell is comprised of two shareholders who are the Iran Electronic Development Company (IEDC) and MTN International (Mauritius) Limited. IEDC currently has two key shareholders: Iran

Electronic Industries, known as SAIRAN and Mostazafan Foundation, known as Bonyad.

The company aims at being the leading provider of telecommunication services in Iran and provides the following services:

- provision of wholesale and retail telecommunication services;
- sales of network traffic capacity to local or international carriers or entities;
- rental of network infrastructure facilities to local or international carriers or entities;
- provision of the internet and data and digital platform-related products and services;
- provision of all other sources of value-added services that is currently available and to be developed in the future;
- dealing with e-commerce, mobile-commerce activities of the above-telecommunication networks; and
- provision of customer services, including but not limited to customer relationship management and call-centre services.

6.2 Methodology
Our suggested BPO framework is used to select processes that should be outsourced and BPO planning in Irancell. According to proposed BPO lifecycle and literature review, BPO project followed step-by-step:

(1) Irancell strategic direction of BPO was defined. Because of competitive pressure of first governmental mobile operator of Iran and regulatory constraints, Irancell had to reduce its operational costs. As a result, Irancell selected IT outsourcing and business processes outsourcing strategies to decrease costs and create competitive advantage. Hence, both operational cost-reduction and acceleration of service providing were selected as two main goal of Irancell BPO plan. Honess (2003) stated that business processes within a company can be broken down into three categories: core; business critical non-core; and finally, non-core, non-critical. Core processes are seldom outsourced, because they are the very essence of the business and the area that requires the most investment. Therefore, critical and non-critical non-core business processes of Irancell were suited for outsourcing to a third party supplier. After analysing business processes of Irancell, selling and customer care business process has been selected as critical and non-core process to outsource.

(2) Business processes were modeled. Irancell used e-Tom standard to define business architecture and focused on BPM as opposed to single functional unit view. The conceptual high-level Irancell business architecture is shown in Figure 5, and the selling and customer care business process model is shown in Figure 6.

(3) The business process of selling and costumer care was remodeled based on BPM approach and service-oriented architecture. This new process model described not only the roles of service providers and service consumers in executing the business process but also the messages, which should be transmitted between them.
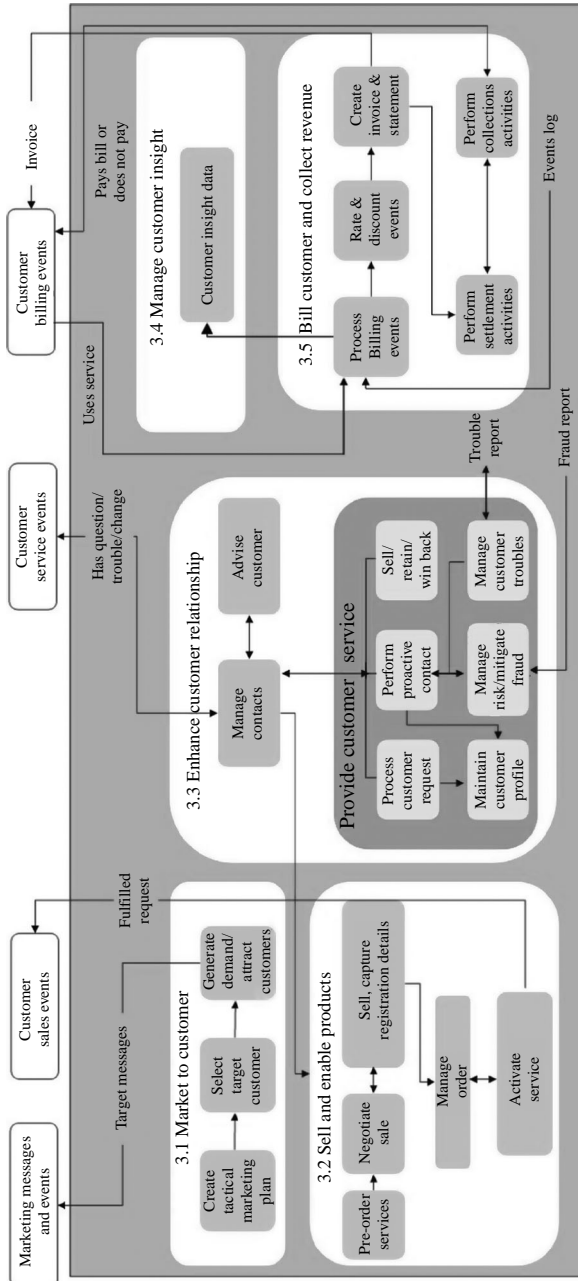
Customer

Strategy, infrastructure & product

Operations

Strategy

Marketing & offers

- Sales & distribution strategy
- Product strategy
- Network build strategy

Service development

- Service strategy & development

Resource development

- Resource & technolgy strategy

Supply chain development

- Supply chain strategy

Infrastructure lifecycle management

- Product capability development
- Network planning & development
- Network service capability delivery
- Network asst installation
- Network & technical product supply chain delivery

Product lifecycle management

- Product development
- Sales channel development
- Service & offer development & retirement
- Product resource development
- Voucher supply chain
- Handset supply chain
- SIM pack supply chain

Operations, support & readiness

Customer relationship management

- Consumer sales
- Distribution channels

Service management

- Stock control & distribution

Resource management

- Distribution support

Supplier partner relationship

- Supply chain management

Fulfilment

- Customer order handling
- Customer order management
- Network provisioning control

Assurance

- Customer problem handling
- Service problem management
- QoS management
- Network maintenance & restore
- Supplier performance

Billing

- Invoicing & collections
- Rating & discounting
- Interconnect billing
- Data collection & distribution
- Supplier settlements & billing

Enterprise management

- Strategic planning
- Brand & marketing management
- Human resource management
- Financial management
- Disaster recovery & fraud
- External resources
- Enterprise quality & information systems

Figure 5.
Irancell business
architecture

Figure 6.
Irancell selling and
customer care business
process

(4) The BPM system was tuned to execute the new business process; the service providers were selected; they contracted to provide services; service level agreements were defined in the contracts. Using BPMS to manage the whole process have reduced the coordination and communication problems between Irancell and suppliers. Also, a KM system was implemented to document and analyse the customers' related data. Some of the data attributes of costumers were being created in outsourced tasks and Irancell KM system gathered and analysed them. Outcomes of the KM system have been used to analyse customer behaviors and manage the customer insight process, which is performing in house.

(5) The goals of BPO plan, as it has been pointed in Step (1), were considered, and performance indicators of the goals were measured.

(6) Final report of executing BPO project was contributed and presented to the stakeholders; furthermore, the BPO team was established to evaluate performance indicators and improve business processes continuously.

Summary
Globalization and competitor's pressure forced firms to reduce their costs and to be more productive. Therefore, organizations should focus on their core competencies and outsource their other functions. Outsourcing has taken on three forms: manufacturing outsourcing, IT outsourcing, and BPO. In this paper, we focus on BPO and its lifecycle and risks. We tried to suppose a comprehensive framework to help performing each step of BPO lifecycle and reduction of BPO risks and pitfalls using BPM and KM approaches. Our suggested lifecycle of BPO has explained in six steps:

(1) Definition of core competences and strategic direction of BPO.

(2) Model and evaluate current business processes and design BPO plan.

(3) Model and assess the BPO consequences before implementation.

(4) Implementing BPO program.

(5) Measure BPO metrics.

(6) Evaluate results and improvement.

Also the most important BPO problems are aggregated in six groups:

(1) dependency on the suppliers and changing collaborative to opportunistic behavior of the supplier;

(2) losing touch with new technological opportunities for product and process innovations;

(3) communication and coordination problems;

(4) cognitive distance between suppliers and firm therefore makes it more difficult to align decisions and exchange knowledge;

(5) outsourcing functions that should not be outsourced; and

(6) decreasing control over the outsourced functions.

Further work
Future effort will focus on more practical BPM and KM effects on BPO. We are also trying to provide a pragmatic BPO methodology due to the experiences from case

studies and actual situations. At last, we need to find some measures for identifying appropriate business processes that should be outsourced.

References

Amega Group (2003), "Strategic outsourcing: analyzing the cost benefits", available at: www. amegagroup.com/reference/strategicoutsourcing.html (accessed September 16, 2003).

Aron, R., Clemons, E.K. and Reddi, S. (2005), "Just right outsourcing: understanding and managing risk", *Proceedings of the 38th Annual Hawaii International Conference on System Sciences* (*HICSS'05*) – *Track 8*, p. 214.

Bandyopadhyay, S. and Pathak, P. (2007), "Knowledge sharing and cooperation in outsourcing projects – a game theoretic analysis", *Decision Support Systems Journal*, Vol. 43, pp. 349-58.

Baithelemy, J. (2003), "The seven deadly sins of outsourcing", *Academy of Management Executive*, Vol. 17 No. 2.

Beasley, M., Bradford, M. and Pagach, D. (2004), "Outsourcing? At your own risk", *Strategic Finance Journal*, Vol. 86 No. 1, pp. 22-9.

Chang, J.F. (2006), "Business process management systems", Auerbach Publications, Boca Raton, FL, pp. 29-32.

Click, R.L. and Duening, T.N. (2005), *Business Process Outsourcing the Competitive Advantage*, Wiley, Hoboken, NJ.

de Boer, L., Gaytan, J. and Arroyo, P. (2006), "A satisficing model of outsourcing", *Supply Chain Management Journal: An International Journal*, Vol. 11 No. 5, pp. 444-55.

Elhadad, M., Balaban, M. and Sturm, A. (2008), "Effective business process outsourcing: the Prosero approach", *International Journal of Interoperability in Business Information Systems*, Vol. 3 No. 1.

Elzinga, D.J., Horak, T., Lee, C.-Y. and Bruner, C. (1995), "Business process management: survey and methodology", *IEEE Transactions on Engineering Management*, Vol. 42 No. 2, pp. 119-28.

Frost, J. (2005), *Märkte in Unternehmen: Theorien der Firma und organisatorische Steuerung*, Gabler, Wiesbaden.

Gewald, H. and Hinz, D. (2004), "A framework for classifying the operational risks of outsourcing", *Proceedings of the 8th Pacific-Asia Conference on Information Systems, Shanghai, China*.

Gilbert, S.M., Xia, Y. and Yu, G. (2006), "Strategic outsourcing for competing OEMs that face cost reduction opportunities", *IIE Transactions*, Vol. 38, pp. 903-15.

Gilley, K.M. and Rasheed, A. (2000), "Making more by doing less: an analysis of outsourcing and its effects on firm performance", *Journal of Management*, Vol. 26 No. 4, p. 764.

Gottschalk, P. (2005), *Strategic Knowledge Management Technology*, Idea Group Publishing, Hershey, PA, pp. 43-86.

Gottschalk, P. (2006), *e-Business Strategy, Sourcing and Governance*, Idea Group Publishing, Hershey, PA.

Grefen, P., Ludwig, H. and Angelov, S. (2003), "A three-level framework for process and data management of complex e-services", *International Journal of Cooperative Information Systems*, Vol. 12 No. 4, pp. 487-531.

Grefen, P., Ludwig, H., Dan, A. and Angelov, S. (2006), "An analysis of web services support for dynamic business process outsourcing", *Information and Software Technology Journal*, Vol. 48.

Hecker, A. and Kohleick, H. (2006), "Explaining outsourcing failure", available at: www.SSRN. com-id939411 (accessed October 27, 2006).

Hoetker, G. (2005), "How much you know versus how well I know you: selecting a supplier for a technically innovative component", *Strategic Management Journal*, Vol. 26 No. 1, pp. 75-96.

Holcomb, T.R. and Hitt, M.A. (2007), "Toward a model of strategic outsourcing", *Journal of Operations Management*, Vol. 25, pp. 464-81.

Honess, S. (2003), "Business process outsourcing", in Angel, J. (Ed.), *Technology Outsourcing*, The Law Society, London, pp. 208-29.

Jackson, T., Iloranta, K. and McKenzie, S. (2001), *Profits or Perils? The Bottom Line on Outsourcing*, Booz Allen & Hamilton, McLean, VA, available at: www.ajira.com

Jung, J., Choi, I. and Song, M. (2006), "An integration architecture for knowledge management systems and business process management systems", *Computers in Industry*, available at: www.sciencedirect.com (accessed March 27, 2006).

Kakabadse, A. and Kakabadse, N. (2002), "Trends in outsourcing: contrasting USA and Europe", *European Management Journal*, Vol. 20 No. 2, pp. 189-98.

Kannan, N. (2008), "A framework for business process outsourcing measurement", white paper, available at: www.ajira.com

Khoshafian, S. (2007), *Service Oriented Enterprises*, Auerbach Publications, Boca Raton, FL, p. 385.

Leavy, B. (2004), "Outsourcing strategies: opportunities and risks", *Strategy & Leadership Journal*, Vol. 32 No. 6, pp. 20-5.

Leiblein, M.J., Reuer, J.J. and Dalsace, F. (2002), "Do make or buy decisions matter? The influence of organizational governance on technological performance", *Strategic Management Journal*, Vol. 23 No. 9, pp. 817-33.

Lewin, J.E. and Johnson, W.J. (1996), "The effects of organizational restructuring on industrial buying behavior: 1990 and beyond", *Journal of Business & Industrial Marketing*, Vol. 11 No. 6, pp. 93-111.

Meland, F. and Straume, O.R. (2007), "Outsourcing in contests", *Public Choice*, Vol. 131 No. 3, pp. 315-31.

Momme, J. (2002), "Framework for outsourcing manufacturing: strategic and operational implications", *Computers in Industry*, Vol. 49 No. 1, pp. 59-75.

Murphy, R. (2004), "Outsourcing the program", *Supply Management Journal*, Vol. 9 No. 6, pp. 32-3.

Padovani, E. and Young, D.W. (2006), "Managing high risk outsourcing", *Public Management*, Vol. 88 No. 1, pp. 29-33.

Prasad, R.P. (2009), *Conclusion: The Outsourcing Option*, Ebesco Publishing, Ipswich, MA.

Quelin, B. and Duhamel, F. (2003), "Bringing together strategic outsourcing and corporate strategy: outsourcing motives and risks", *European Management Journal*, Vol. 21 No. 5, p. 652.

Seshasai, S., Gupta, A. and Kumar, A. (2004), "An integrated and collaborative framework for business design: a knowledge engineering approach", MIT Sloan School of Management Working Paper 4469-04, MIT Sloan School of Management, Cambridge, MA, available at: http://ssrn.com/abstract_id=509683

Weske, M. (2007), *Business Process Management Concepts, Languages, Architectures*, Springer, Berlin, pp. 6-57.

Wüllenweber, K., Beimborn, D., Weitzel, T. and König, W. (2008), "The impact of process standardization on business process outsourcing success", *Information Systems Frontiers*, Vol. 10 No. 2, pp. 211-24.

Zhao, L., Yim-Teo, T.H. and Yeo, K.T. (2004), "Knowledge management issues in outsourcing", *Proceedings of the IEEE International Conference on Engineering Management, Singapore*, Vol. 2, pp. 541-5.

Corresponding author
E. Mahmoodzadeh can be contacted at: e.mahmoodzadeh@gmail.com

www.manaraa.com