

Managing the inhibitors in the implementation of inter-organisational costing programmes

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ABSTRACT

Increased dynamics and uncertainty in today's supply chains require timely, accurate and relevant information to enable supply chain managers to make effective decisions. Traditional accounting practices are criticised as being unable to deliver this information. In the past decades various costing approaches like direct product profitability, total costs of ownership, target costing, and activity-based costing were introduced in order to add more meaning and relevance to existing practices. Benefits derived from the intra and inter organisational application of these practices are recognised. Even though, evidence shows that the adoption of these practices is still limited.

This paper contributes to the better understanding of how to manage the inhibiting factors associated with the successful implementation of the aforementioned costing programmes in intra and inter-organisational context. Paper presents a comprehensive list of inhibitors that hinder implementation of inter-organisational costing (IOC) programmes. It concludes that majority of inhibiting factors is people related which suggests that IOC implementation is not only technical but socio-technical process. Furthermore paper introduces nine stage implementation framework and explains and stresses the importance of very early identification of inhibiting factors in the implementation process of IOC programmes.

Key Words: Intra- and inter-organisational accounting, Supply chain management, Accounting information, Inhibitors.

1. INTRODUCTION

The literature is not short of calls for increased sharing of information in supply chains (Ellram and Hendrick, 1995; Kemppainen and Vepsalainen, 2003; Myhr and Spekman, 2005). Kemppainen and Vepsalainen (2003) argues that cost transparency is particularly important area of information sharing between partners in supply chains in order to reduce total supply chain costs. LaLonde (2003) argues that lack of accurate and timely costing data that can be used for analytical decision making in supply chains remains to be unsolved.

Unsustainable competitive advantage of organisations on the market, together with increased dynamics and uncertainty in today's supply chains require timely, accurate and relevant information to enable supply chain managers to make effective decisions. In this context, traditional accounting practices are criticised as being unable do deliver this information. The recognition of limits and inadequacies of traditional accounting practices is not novel. In the past decades various costing approaches were introduced in order to add more meaning and relevance to existing practices in the inter-organisational context. Direct product profitability (DPP), total cost of ownership (TCO), target costing (TC) and activity based costing (ABC) are costing approaches which are probably the most often discussed as practices used in the inter-organisational costing (IOC) programmes. According to Kulmala *et al* (2002) IOC programmes are those that address the objective of "finding lower cost solutions than would be possible if the firm and its buyers and suppliers attempted to reduce costs separately" (p. 37).

Scholars as well as practitioners have been reporting various benefits once aforementioned programmes are successfully implemented. Benefits (we are listing them in no particular connection to specific costing practice) are ranging from providing better visibility of product's profitability (LaLonde and Pohlen, 1996), positive impact on business relationships (Doherty *et al*, 1993), increased understanding of true costs of doing business (Lin *et al*, 2001, Zsidisin *et al*, 2003), transmission of competitive pressures upstream of a supply chain (Cooper and Slagmulder, 2003) up to increased knowledge of firm's business processes, process related costs (Stapleton *et al*, 2004) and improved decision making (Blocher *et al*, 2005).

Various sources are documenting similar evidences about the limited adoption of IOC programmes among organisations (Borin and Farris, 1990; Doherty *et al*, 1993; Ellram, 1994, 1998; Cooper and Slagmulder, 1999; Ferrin and Plank, 2002; LaLonde, 2003). Namely, in spite of the known shortcomings of current costing approaches and proclaimed benefits of adoption of IOC programmes, the latter have found the place in organisations in the fairly limited scope. This paper aims to contribute to the better understanding of how to manage the inhibitors of the implementation of IOC programmes, by answering following two questions: [1] Which are the inhibiting factors and [2] when in the process of IOC implementation they need to be identified.

The paper is structured as follows; first we touch on inadequacies of current accounting practices, where we highlight major reasons for the current criticism. The next section introduces four most commonly used practices in the IOC programmes; DPP, TCO, TC and ABC. This is then followed by the section on selection of literature that we have analysed. In the chapter that follows we present identified inhibitors and answer question one. Following through the discussion on when in the process of the IOC implementation inhibitors need to be identified we answer question two. Conclusions are presented in the last section.

2. CRITICISM OF CURRENT ACCOUNTING PRACTICES

The importance of management accounting to provide decision making information and knowledge to managers on strategic and operational level is unarguably recognised (Axelsson, 2002; Kulmala *et al*, 2002). The main role of management accounting according to Gupta and Gunasekaran (2004) is in providing timely and value relevant information for managerial decision making, both long and short term. Growing concerns and dissatisfaction about the traditional management accounting practices among scholars and practitioners indicate that these practices in the current state are not satisfactory fulfilling this role. Hughes (2005) states that although maybe accurate information; are often late, irrelevant and misleading. To similar critique is exposed also financial reporting as being too late, too aggregated (Johnson and Kaplan, 1987) and too distorted (Christopher, 2005) to be relevant for managerial planning and decision making.

In the supply chain context, traditional management accounting practices received even greater attention in terms of criticism and expressed concerns. They tend to be inappropriate to address a wide scope of integrative and process oriented nature of supply chain management for reasons such as:

- Information captured using standard costing are insufficient for determining costs related to supply chain processes (Cokins, 2001);
- Standard costing as a cost assessment tool for identifying inter – organisational cost reduction opportunities is not suitable for its limited intra- organisational scope (Cooper and Slagmulder, 1998; Kulmala *et al*, 2002; Mena *et al*, 2004; Christopher, 2005;)
- Costs are captured at the too high level of aggregation (Christopher, 2005)
- Standard costing does not encourage improvements (Gupta and Gunasekaran, 2004)

The shortcomings of standard cost accounting methods hinder organisations' efforts to follow the objective of inter-organisational cost management programmes. For organisations this mean that firstly, they need to coordinate cost reduction efforts of multiple participants in supply chain and secondly cost management practices need to be applied inter-organisationally; beyond the boundaries of the focal organisation.

In the past decades the need for more accurate costing of increasingly customised products and services (LaLonde and Pohlen, 1996) has triggered a development of various costing methods. Direct product profitability (DPP), total costs of ownership (TCO), target costing (TC) and activity based costing (ABC) are probably the most often discussed approaches. All of them are attempting to overcome some of the limitations of the existing accounting practices in the intra and inter-organisational context.

3. COSTING APPROACHES IN INTER-ORGANISATIONAL COSTING PROGRAMMES

Direct product profitability (DPP) has emerged as a result of growing concerns in retail sector about the profitability and costs of individual products and stock keeping units. DPP was first serious attempt to determine costs of products beyond the boundaries of a focal organisation. Traditionally decision makers in retail sector had relied on gross profit or gross margin for measuring performance (LaLonde and Pohlen, 1996). These measures exclude the costs associated with handling, warehousing, freight, discounts, allowances and direct labour,

which significantly vary from one to another product. DPP takes these costs in the account. According to Doherty *et al* (1993) a major benefit associated with the use of DPP is in its potential for improvement of supplier-retailer relationships, through the increased visibility of costs and mutual understanding of product and supply chain costs. However DPP excludes fixed overhead costs and administrative expenses (LaLonde and Pohlen, 1996), besides this it is a static measure, which can not reflect the effects of changes in shelf-space, or of the benefits of increased sales of item B caused by item A (Bookbinder and Zarour, 2001).

Total Costs of Ownership (TCO) has emerged in 1980s with the aim to better understand the total costs associated with the purchase of good or service from a specific supplier (Zsidisin *et al*, 2003; LaLonde and Pohlen, 1996). TCO recognise that purchase price does not encompass all costs associated with the purchase and that the total costs of acquiring the product or service from specific supplier also depend from the supplier's performance (LaLonde and Pohlen, 1996). Thus, costs needed to be included in the TCO analysis are costs of ordering, expediting, receiving and inspecting (LaLonde and Pohlen (1996), costs associated with supplier search and qualification, tariffs and duties, warehousing, downtime caused by late, defective and incomplete shipments and warranty work, or customer returns associated with defective/poor quality material or components (Ellram, 1994). By applying TCO upstream in supply chain a focal organisation can assess how inter-organisational relationships affect their costs (Cokins, 2000), but it does not show how focal organisation's behaviour may affect upstream organisation's costs (LaLonde and Pohlen, 1996). This limitation arises out of TCO's inability of capturing upstream organisation's costs (LaLonde and Pohlen, 1996), which leads to missing opportunities for assessing and making inter-organisation cost trade-offs.

The target costing (TC) system is often used as the main tool in inter-organisational cost management (Axelsson *et al*, 2002). The main objective of TC is ensuring constant vigilance on the cost and functionality of the product (Ellram, 2006) in order to achieve specific functionality and quality (Cooper and Slagmulder, 1999) and level of profitability (Cooper and Slagmulder, 1999; Ellram, 2006) when a product is sold at the anticipated sales price. The selling price is an organisation's estimation of the market price that can be achieved. The total target cost allowed for the product or service equals estimated sales price less desired profit (Ellram, 2002a, 2006). Ellram (2000) suggests that TC can be a stand alone application, partially or fully integrated. Target costing system become especially effective when it is linked to form a chain (Cooper and Slagmulder, 2003). TC system is "chained" when the output of a buyer's TC system becomes an input to a supplier's target costing system, which reflects in transmission of competitive pressure faced by the firm at the top of the chain to other firms in the chain (Cooper and Slagmulder, 2003). Cooper and Slagmulder (1999) and Dekker and Smidt (2003) argue that target costing is beneficial mostly in circumstances where price sensitivity of the market prevent large price manoeuvres, which forces organisations to manage costs more aggressively.

Activity Based Costing (ABC) attractiveness has increased with raising awareness of shortcomings of traditional accounting systems where indirect costs are allocated to the products on volume-related base (Lin *et al*, 2001; Armstrong, 2002), often, indirect labour. ABC is primarily concerned with assignment of resource costs to cost objects such as (Blocher *et al*, 2005) products, services or customers based on activities performed for the cost objects. Direct and indirect costs are assigned to cost objects and in that way ABC overcomes the shortcomings of DPP, where fixed overhead costs are excluded. ABC gained considerable attention for its ability of tracing the consumption of resource costs through work activities as "a tool for evaluating supply chain performance" (LaLonde and Pohlen,

1996). According to some, ABC helps to uncover the true costs of business (Lin *et al*, 2001), provides a better decision making basis and cost controlling support, better profitability measures of products, services or channels, and better provision of controlling capacity costs (Blocher *et al*, 2005). Nevertheless, we need to be realistic about the ABC's "capabilities" as a panacea for overcoming all the shortcomings of traditional accounting systems and achieving goals of inter-organisational costing initiatives. Concerns are pointed mainly towards ABC's implementation difficulties (Kaplan and Anderson, 2004), inability of identifying value and non value added activities in organisations (LaLonde and Pohlen, 1996) and inability to capture the whole complexity of actual operations in organisation (Kaplan and Anderson, 2004).

4. THE INHIBITORS IN THE IMPLEMENTATION OF IOC PROGRAMMES

4.1. Method for selection of sources of evidences

The selection of appropriate sources of literature followed the guidelines of the evidence-based structured review of the literature (Tranfield *et al*, 2003). Formulation of search strategy started with the selection of the relevant databases, time frame and key words. Databases included Pro-Quest, Ebsco, Emerald and Science Direct. This selection of databases provide the access to a variety of peer reviewed journals ranging from Accounting, Organisations and Society, Harvard Business Review, Journal of Business Logistics and The Journal of Business and Industrial Marketing. In terms of the time frame we selected the literature published in years between 1980 and 2006, which is the period when both, supply chain management field as well as costing approaches under the review have arisen. The selection of the keywords associated with the word "inhibitor" was guided by the description of inhibitor by Assink (2006) where it is named also as "a barrier" or something that goes in the way of some development. In the initial search we have included key words with similar meanings like; inhibitors, inhibiting factors, barriers, impediments, issues and problems. These were coupled with the key words associated with the implementation of IOC costing approaches, supply chain management, logistics, intra-organisational and inter-organisational in various combinations. With this combination of keywords hits from the databases were very limited, which indicated the absence of the explicit studies addressing IOC implementation inhibitors.

Consequently the inhibitors related key words were excluded from the search, which resulted in much larger set of identified literature. The list of hits was firstly edited to remove the duplicated records. The titles where then checked to ensure the relevance with the review. We have then reviewed abstracts of all papers and removed all non-relevant literature before the full review. The selected publications were also cross referenced in order not to miss some relevant literature which was not initially identified from the databases. The inhibitors were later identified, during the full review of publications as a part of other discussions on like cost management practices, costing implementation projects and management accounting. The selected publications for the review at the end cut across the two pairs of dimensions (table 1):

- Theoretical and empirical discussions and
- Intra and inter organisational perspective.

Table 1: Phenomenon studied from theoretical and empirical sources

Sources of theoretical evidences		
Phenomenon studied	Scope	
<ul style="list-style-type: none"> ▪ Target costing in the context of supply chains ▪ Target costing in the inter-organisational environment ▪ Cost to serve method in the context of supply chains ▪ ABC as a strategic costing method to manage business operations ▪ ABC as a tool for determining cost for marketing and logistics activities ▪ ABC as a tool for measuring supply chain costs, information integration issues ▪ ABC as a costing method in the supply chain context ▪ ABC – overview, design and implementation in intra-organisational context ▪ ABC/ABM as an approach to the management staff activity ▪ Costing data and information integration in the supply chain context ▪ Strategic cost management beyond the boundaries of the firm ▪ Management accounting techniques for supply chain management ▪ Supply chain costing methods and associated issues ▪ Challenges for cost management practices in new enterprise environment ▪ Disclosure of sensitive costing data in business relationships ▪ Cost measuring and data sharing in supply chain context ▪ Cost accounting and cost management in the network relationships 	<ul style="list-style-type: none"> ▪ Inter ▪ Inter ▪ Inter ▪ Intra ▪ Inter ▪ Inter ▪ Inter ▪ Intra ▪ Intra ▪ Inter ▪ Inter ▪ Inter ▪ Inter ▪ Inter ▪ Inter ▪ Inter ▪ Inter 	
Sources of empirical evidences		
Phenomenon studied	Industry / Country	Methodology / Scope
<ul style="list-style-type: none"> ▪ DPP 	<ul style="list-style-type: none"> ▪ Retail super market chain / U.S. ▪ Retail textile / UK ▪ Wholesaler textile / Singapore 	<ul style="list-style-type: none"> ▪ Case study / intra ▪ Case study / intra ▪ Case study / inter
<ul style="list-style-type: none"> ▪ TCO 	<ul style="list-style-type: none"> ▪ Cross sectoral / U.S. ▪ Cross sectoral / U.S. ▪ Cross sectoral / U.S. ▪ Cross sectoral / U.S. ▪ Manufacturing industry / U.S. ▪ Cross sectoral, U.S. 	<ul style="list-style-type: none"> ▪ Survey / 261 responses / intra ▪ Nine case studies / intra ▪ Survey / sample N/A / intra ▪ Eleven case studies / intra ▪ Survey / 146 responses / intra ▪ Five case studies / intra
<ul style="list-style-type: none"> ▪ TC 	<ul style="list-style-type: none"> ▪ Construction sector / UK ▪ Cross sectoral / U.S. ▪ Cross sectoral / U.S. ▪ Cross sectoral / U.S. ▪ Cross sectoral / Netherland 	<ul style="list-style-type: none"> ▪ Two case studies / inter ▪ Survey / 261 responses / intra ▪ Five case studies / intra ▪ Eleven case studies / intra ▪ Survey / 43 responses / intra
<ul style="list-style-type: none"> ▪ ABC 	<ul style="list-style-type: none"> ▪ Wholesaler textile / Singapore ▪ Manufacturing equipment sector / Belgium ▪ Cross sectoral 	<ul style="list-style-type: none"> ▪ Case study / inter ▪ Case study / intra ▪ Multiple case studies / intra
<ul style="list-style-type: none"> ▪ Cost management development projects 	<ul style="list-style-type: none"> ▪ Manufacturing sector / Finland 	<ul style="list-style-type: none"> ▪ Three case studies / inter
<ul style="list-style-type: none"> ▪ Development of management accounting for supply management 	<ul style="list-style-type: none"> ▪ Manufacturing sector / Sweden 	<ul style="list-style-type: none"> ▪ Six case studies / intra
<ul style="list-style-type: none"> ▪ Inter organisational cost management practices 	<ul style="list-style-type: none"> ▪ Manufacturing sector / Japan 	<ul style="list-style-type: none"> ▪ Three case studies / inter
<ul style="list-style-type: none"> ▪ Inter-firm supply chains and cost management practices 	<ul style="list-style-type: none"> ▪ Cross sectoral / U.S. and UK 	<ul style="list-style-type: none"> ▪ Three case studies / inter
<ul style="list-style-type: none"> ▪ Inter-firm accounting in supply chains 	<ul style="list-style-type: none"> ▪ Manufacturing equipment / UK 	<ul style="list-style-type: none"> ▪ Single case study / inter
<ul style="list-style-type: none"> ▪ Costing knowledge in supply relationships 	<ul style="list-style-type: none"> ▪ Cross sectoral / U.S. 	<ul style="list-style-type: none"> ▪ 24 case studies followed by survey (84 responses) / intra
<ul style="list-style-type: none"> ▪ Open book accounting in customer supplier relationships 	<ul style="list-style-type: none"> ▪ Cross sectoral / Germany and Finland 	<ul style="list-style-type: none"> ▪ Multiple case studies / inter

The rationale for the selection of the theoretical and empirical sources also in the intra-organisational context is rooted in the suggestion from the literature about the necessity of organisation’s internal “readiness” prior to implementation of IOC programmes. There is strong evidence in the literature that development of internal capabilities such as knowledge and understanding of costs (LaLonde and Pohlen, 1996; Cokins, 2000, 2003; Norek and Pohlen, 2001), allocation of human resources (Nicolini *et al*, 2000), internal information integration (Rudberg *et al*, 2002) among others, is a prerequisite for a successful inter-organisational application of studied costing approaches.

In our selection of theoretical papers, the intra-organisational context mean that phenomenon was discussed within the boundaries of an organisation, where inter-organisational context refers to discussions in the context of a dyadic relationship, supply chain or supply network

relationships. In the empirical papers, the intra-organisational context means that data collection was performed only from one party even when the phenomenon under observation was related to external parties. Inter-organisational in the empirical studies means that data was collected from all involved parties concerned with the specific phenomenon being studied.

4.2. Identification of IOC implementation inhibitors

In this section we are addressing the question, which are the inhibitors in the implementation of IOC programmes. The in-depth review of the selected literature acted as a way to identify and extract the inhibitors (table 2). These were then grouped in three categories; people, process and technology related inhibitors.

Table 2: Inhibitors of the implementation of the IOC programmes

#	Key inhibitors	Category		
		People	Process	Technology
1	Absence of cross functional teams	x	x	
2	Absence of expert knowledge to cost the activities	x		
3	Absence of link between performance measurement systems and costs	x		
4	Absence of management skills by management accountants	x		
5	Absence of skills in managing IOC models	x		
6	Absence of supplier involvement	x	x	
7	Absence of supply management people involvement	x	x	
8	Absence of the recognition that costing systems are necessary	x		
9	Adversarial character of business relationships	x		
10	Complicated tracing of resource costs		x	x
11	Conflict between management incentives and long term perspective	x		
12	Credibility of internal costing data	x	x	x
13	Credibility of reported numbers	x	x	x
14	Data manipulation and improper use of it	x		
15	Disagreements on implementation approach	x		
16	Idle time reporting in the IOC design phase	x	x	
17	Inability of determining market prices	x	x	
18	Inability of external information integration		x	x
19	Inability of internal information integration		x	x
20	Inability to change costing data collection and analysis if data are shared externally	x	x	x
21	Inconsistent use of costing language	x		
22	Information appropriation	x		
23	Insufficient level of detail in shared financial data	x	x	x
24	Lack of differentiation of costing systems based on customers dynamics	x	x	
25	Lack of focus on people	x		
26	Lack of internal interest for change in costing approaches	x		
27	Lack of internal understanding of costs	x		
28	Lack of management support	x		
29	Lack of process oriented accounting systems			x
30	Lack of resources to deal with the complex cost tracing, relationship building	x		x
31	Lack of training and education of all costing information users	x		
32	Legacy of functional silo and the absence of process thinking	x		
33	Loss of customer focus	x	x	
34	Low perception for IOC implementation and accountability for results	x		
35	Need for developing of new supply chain leaders	x		
36	Over complex IOC systems	x	x	
37	Poor internal availability of data		x	x
38	Poor IOC model design	x	x	
39	Slow response to change	x		
40	Underestimation of organisational resistance to change	x		
41	Uneven sharing of benefits	x		
42	Unwillingness to share information two way	x		

The long list of inhibitors could however allow for different groupings with larger or lesser number of categories, as we have chosen. Ellram (2002b) for instance divided barriers to successful strategic cost management in supply chains on internal and external. Analogy and a view for our categorisation is taken from the research by Collins and Porras (1996), where authors state that the best performing organisations have to have in place right people, right technology and right processes. A focus group, which is defined by Stokes and Bergin (2006, p. 27) as "...a group of individuals selected and assembled by researchers to discuss and comment upon, from personal experience, the topic that is the subject of the research", was used to comment on literature findings and to assign inhibitors to each category. In order to ensure greater reliability of our findings, focus group was consisted of academics and practitioners who are knowledgeable in the area of supply chain management, cost accounting and project management. The discussion added little to the identification of additional inhibitors, which indicates a thoroughness of the initial literature review. More debatable was assignment of inhibitors to each group, due to different personal opinions. After two sessions group agreed on the grouping as it is suggested in table 2.

With the selection of groups we have not discounted the importance of external factors, like adversarial relationships or unwillingness of buyers and suppliers to share costing data. We rather defend the view that any organisation involved in the implementation of IOC programmes need to be able to manage all three categories of inhibitors firstly and by doing that minimizes the risk of implementation failure in intra-and inter-organisational context. In the following five sections, the most consistently mentioned inhibitors are described.

4.2.1. People related inhibitors

The adversarial character of business relationships accompanied with the *absence of trust* and *imbalance of power* between organisations is well known reality in nowadays organisations and it is particularly problematic for the application of costing approaches that span organisational borders (Cooper and Yoshikawa, 1994; Nicolini et al, 2000). Two issues, both rooted in the relationships with adversarial character came from our analysis particularly strong; *organisational reluctance of reciprocal sharing of costing information* and *concerns related to the information appropriation*. Organisations are likely to experience benefits of inter-organisational costing approaches in those relationships where both organisations are willing to: work for mutual benefit, willing to cooperate and share sensitive information (Cooper and Yoshikawa, 1994; Cooper and Slagmulder, 1998, Kulmala et al, 2002). *Organisations' unwillingness of sharing cost information* prevents accurate costing of activities outside the organisation (Lalonde and Pohlen, 1996) and lead to the loss of costing information transparency, which is one of the prerequisites for establishing trust in business relationships (Lamming, 1993). Suppliers as usually less powerful parties in business relationships are somehow "expected" to disclose costing information to their buyers (Munday, 1992) and to comply with what powerful party is demanding (Norek and Pohlen, 2001). In addition to this suppliers often feel threatened about the fact that costing information disclosed towards powerful parties will be used against them, which likely creates an environment where implementation of IOC approaches will experience problems.

Organisational and resistance to change is another issue which is grossly underestimated in the IOC implementation initiatives. Ellram and Sifferd (1998) pointed out that resistance to change may in initiatives that spans organisational borders represent "dual challenge" for organisations, since it requires changes in the buyer's and supplier's organisations. *Lack of managerial support* known from the organisational change literature is one of the most often errors why transformation efforts in organisations fail (Kotter, 1995). Findings from our

analysis indicate this issue to be a frequent inhibitor. Both, Ellram's (2002a, 2002b) and Seal *et al's* (2004) empirical results show that involvement of management acts as a driver or lack of involvement as a inhibiting factor in the IOC implementation efforts.

The legacy of functional silo and the absence of process thinking in organisations are also recognised as being a clear inhibitor for successful implementation of IOC programmes (Ellram, 1994; Ellram and Siferd, 1998; Fernie et al, 2001). All introduced IOC approaches require a shift in thinking about an organisation as being a block of functions towards the one of being a set of seamlessly integrated business processes. Retaining information about products, services, processes and costs in functional silos has harmful effects on organisation's responsiveness. Even organisations with excellent technology that support process oriented view find that deeply imbedded functional silo thinking prevent collaboration and sharing information internally – which further prevents the organisational responses to collaborate and share information externally.

According to Milligan (1999) managers involved in the implementation and daily work with TCO systems report "*labour intensiveness*" of cost capturing. Stapleton *et al* (2004) observe similar time-consuming, *labour-intensive* and *costly process* during the ABC implementation. Furthermore, the conclusions from the case study research by Kajüter and Kulmala (2005) on adoption of open-book accounting in manufacturing industry show that one of the six key reasons of adoption failures lies in the supplier's lack of capable resources for supporting the development of accounting systems that can reasonably support open-book accounting practices. However, dedicating a sufficient number of human resources to deal with the IOC implementation may not be enough. *Internal understanding of costs and possession of costing knowledge* is a prerequisite for successful implementation of IOC approaches (LaLonde and Pohlen, 1996; Cokins 2000, 2003; Norek and Pohlen, 2001). Cokins (2000) is highlighting a fact that only by having the internal understanding of how organisations involved in IOC initiatives create costs for themselves and how they create costs for each other, they will be able to start joint discussion about opportunities for joint cost reduction.

4.2.2. People-Process related inhibitors

The implementation of IOC programmes requires *involvement of cross-functional teams* (Ellram, 1994; Cullen et al, 1999; Ellram, 2002a; Ramos, 2004). Implementation complexity and difficulty vary among organisations for numerous reasons such as difference in IOC models complexity, complexity of operations, resource availability and organisation's specific cultural issues. Further findings indicate that *poorly designed* and *over-complex IOC models* lead towards failure (Waeytens and Bruggeman, 1994; Cokins, 1998; Kaplan and Anderson, 2004). The experience of ABC implementation captured by Cokins (1998) show that organisations need to be precise and clear in the early model design phase when it comes to the requirements of costing data accuracy and costing data details. Failing in achieving this will result in an over-complex IOC model that contains unnecessary costing data (Cokins 1998), unmaintainable quantity of costing data (Kaplan and Anderson, 2004) and data which is likely unsuitable for intra and inter-organisational sharing.

4.2.3. Technology related inhibitors

With the increasing emphasis on integrating customers and suppliers of an organisation (Christopher, 1998), functionalities of IT systems have changed. However two major limitations of current ERP systems are pointed out by Akkermans *et al* (2003): insufficient extended enterprise functionality and lack of functionality beyond managing transactions. Even newer products like; supply chain management systems (SCM), supplier relationship

management systems (SRM), and customer relationship management systems (CRM) reside on the transactional layer provided by the ERP systems although many vendors claim to have business process orientation (Chopra and Meindl, 2003). Our findings support the view that current IT systems which are in place in organisations *lack process orientation* which would better support a process-oriented nature of IOC programmes. Ellram (1994) is stressing in her research on TCO models that lack of appropriate information systems is the major resource related problem to support TCO implementation initiatives. Successful adoption of supply chain management practices together with appropriate costing systems will require adoption of process and customer oriented information systems, which will enable firstly internal information integration and later external integration with upstream and downstream partners (Davenport *et al*, 2004).

4.2.4. Process-Technology related inhibitors

The *availability of internal costing data* is another major concern. For the organisation which lacks in costing data availability for internal use is practically impossible to share it with external parties. Kulmala *et al* (2002) state that even if there is a will for sharing information externally, “the ability to produce needed information is also necessary”. This particular problem can be observed quite early in the organisational attempts of adopting IOC programmes. In the study on DPP as a decision support in retail sector, Doherty *et al* (1993) reported the difficulties in obtaining required costing data and often its non-existence. LaLonde and Pohlen (1996) stress that some organisations may not have capabilities of tracing resource costs to specific activity and most of them have not even adopted costing approaches which would enable them to provide costing information at the activity level and in this way satisfy internal and external needs for costing information.

A well documented problem for instance in the research related to information sharing in supply chain is a problem of *internal and external information integration*, which is a key inhibiting factor for sharing costing information beyond organisational borders (Cokins, 1998; LaLonde, 2003). The management and execution of supply chain business processes depends upon the accurate, forehand, and interchangeable information. Grubic and Bastl (2006) acknowledged concerns related to the lack of information flow understanding that must support supply chain processes. In order to achieve the inter-company business process integration, physical system integration and application integration must be present (Rudberg *et al*, 2002) as well. Although there are some initiatives in resolving this issue, like enterprise application integration (EAI) approach presented in Möller (2005), complete IT system interoperability is measured in years or even decades according to Davenport and Brooks (2004).

4.2.5. People-Technology-Process related inhibitors

A very consistent finding in our analysis is that organisations often *do not trust their internal costing data* (Milligan, 1999; Ellram, 2002b; Cokins 2003). Credibility of data is an important factor for the overall success of implementation of IOC approaches (Ellram, 2002b), and if it is overlooked by organisations, it can have negative consequences in various areas. A speculation about the validity of decision making basis is one case. Milligan (1999) illustrates an example of purchasing managers from organisations where TCO systems are in place, that their TCO systems are “vague, inaccurate or otherwise untrustworthy” (p. 22). Cokins (2003) for instance also present a similar case. He is stressing that most organisations operate with “a resigned acceptance” that their internal costing data are of poor quality and do not reflect realistic situation. Ellram (2002b) argue that low credibility of costing data is certainly not in favour of success of IOC approaches. Furthermore, management in organisations should keep

in mind that costing information collected through the process of tracing resource *costs for internal purposes may not always be suitable for sharing externally*. This difference in the form and nature of costing information for internal and external sharing calls for a change in the way organisations collect and process costing data (Munday, 1992). Changes and revision of internal cost collection policies should be also accompanied with the efforts of defining a sufficient level of details in costing data (Munday, 1992) and determination of collaborative costs (Nicolini *et al*, 2000).

Waeytens and Bruggeman (1994), Cokins (1998) and Kaplan and Anderson (2004) express similar concerns related to the *over-complex IOC models*, which originates in their experiences with ABC systems implementation. Waeytens and Bruggeman's (1994) study of reasons for failure in implementation of ABC system for continuous improvements show that one of the inhibiting factors for successful implementation is rooted in the design choices of ABC models. Poorly defined activities (Waeytens and Bruggeman, 1994), too detailed data and missing discussions on required accuracy of costing data (Cokins, 1998) lead to oversized ABC models, which as stated by Kaplan and Anderson (2004) is an obvious problem to the most ABC implementations.

4.3. Point of identification of inhibitors

The question "When in the process of the implementation of IOC programmes the inhibiting factors need to be identified" is answered in this section. The implementation of IOC programmes is a complex change project which includes multiple stakeholders and as pointed out earlier in the paper is also resource intensive. Resource intensive nature of IOC implementation programmes may have the impact on an organisation's short term financial performance. Significant financial investments could result in for example; a short term drop of the cash flow, a decrease of departmental and organisational efficiency due to interrupted business processes (e.g. product and/or service delivery) and lower asset utilisation, which all together emphasise the importance of identification of potential inhibitors in order to prevent project's failure.

Based on the comparison of the implementation steps of various frameworks taken from: ABC by Lin *et al* (2001), TC by Ellram (2006), Supply Chain Time and Cost Mapping (SCTCM) approach in intra-organisational context by Whicker *et al* (2006), SCTCM approach in inter-organisational context by Bastl and Grubic (2006) and promising practices for managing complex organisational projects (Turner, 1993) we propose a *nine step implementation approach for the implementation of IOC programmes*: [1] Identify a business need (justification for implementation); [2] Establish joint steering group from both partners; [3] Define and agree: IOC programme's aim, scope, objectives, deliverables, risks and resources; [4] Appoint project manager/champion; [5] Select a cross-functional team; [6] Detail the implementation plan, time lines and regular steering group reviews; [7] Execute the implementation; [8] Review the project against agreements in the step three and [9] Continuous improvements.

To answer the question *when* in the implementation process the inhibiting factors need to be identified, we argue that an additional question should be answered prior to that; when in the implementation process, specific inhibitor might become a "show-stopper"? With "show-stopper" we do not mean to necessarily stop the implementation progress, rather to slowing it down or significantly increase the risk of IOC implementation failure. In order to find this answer nine suggested implementation steps were plotted against the 42 prior identified inhibiting factors. We have firstly re-examined theoretical and empirical papers to identify in

which stage certain inhibitor become a “show-stopper”. Secondly, for both, those inhibitors that we were able to identify “show-stopping” stage from the literature and for those that we did not we used in the chapter 4.2 mentioned focus group of academics and practitioners to discuss and assign each inhibitor to each implementation stage.

Results revealed that some inhibiting factors like; *lack of internal understanding of costs, unwillingness to share information or adversarial character of business relationships* could be a serious hurdle in very early stages of implementation. This suggests that some inhibitors could be treated as qualifying factors for the “take-off” of the implementation project. However, figure 1 displays that most of the inhibitors could become a “show-stopper” in the *execution phase*, which is very late in the implementation of IOC programmes. However, by stating “late” it is not assumed that all implementation stages last equal period of time as figure 1 might suggests, but we do argue that by the end of the execution stage most of the project’s spending is already completed.

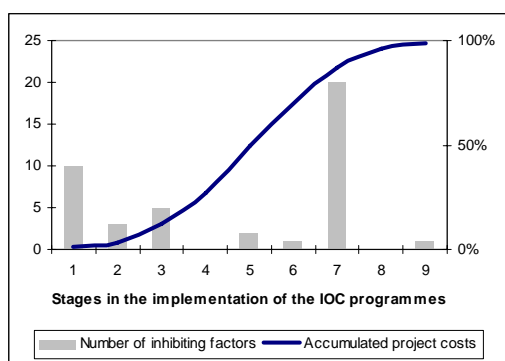


Figure 1: Number of inhibiting factors that could become a serious problem per implementation phase against accumulated project costs

By using a total accumulated project costs as a proxy for a decision when in the implementation of IOC programmes inhibiting factors need to be identified (and actions taken in the response to that) we would suggest to do that in two phases:

- First check for compliance with qualifying factors in the first stage of the implementation process and
- Second check in the third phase of the implementation when IOC programmes scope, objectives, deliverables, risks and resources are identified.

5. RESEARCH LIMITATIONS AND FURTHER STEPS

Since both addressed questions in this paper have been answered through the literature review and involvement of the focus group, the limitations arise from the limitations of both methods. The selection of different databases might reflect in perhaps different set of inhibitors. The consensus of the focus group about the grouping of inhibitors and assignment of inhibitors to particular implementation stage could also be different, if the group would consist of different people or be facilitated by a different person. This is related to the critique of focus groups by Stokes and Bergin (2006) who are stating that some respondents in the focus groups may publicly agree to the views, whilst privately disagree, which means that the consensus could be interpreted that nobody disagrees with the view, but equally nobody wholly endorses. Given the conceptual nature of the paper, the proposed list of inhibitors, suggested implementation approach and suggested point of their identification require empirical validation.

6. CONCLUSIONS

In order to reap the benefits of supply chain management approaches, timely, accurate and relevant information exchange between organisations is essential. Traditional costing approaches, judged from the supply chain perspective, happen to be a subject of criticism as they are lacking in relevance to increasingly changing business environment. Due to the immense cost pressures organisations are forced to search for cost reductions not only intra-organisational but also at the buyer-supplier interface through the application of IOC programmes. This research is summarizing numerous dispersed evidences from the theory and practice on potential inhibitors of IOC implementation programmes. The list of inhibitors can be effectively used by managers as a check list of potential barriers prior to IOC implementation and for assessment of organisational readiness. We argue that the first step in managing inhibitors is their identification. In this sense we contribute a comprehensive list of potential inhibiting factors that could act as a serious problem in the IOC implementation process. They are clustered in three categories; people, process and technology related, where people related inhibitors are predominant. This suggest that implementation of IOC programmes is not only a “technical” task, but a complex socio-technical process, which requires a strong emphasis on people. The paper also introduces the nine stage IOC implementation approach. We conclude that some of the inhibiting factors may act as qualifying factors for the IOC project’s “take off”. Most of the inhibiting factors will appear as a problem in the execution project stage where most of project’s spending is already done. The identification of inhibiting factors (and appropriate response to them) in the very early project stages is therefore essential for increasing chances of successful implementation. We suggest empirical validation of presented implementation framework by using multiple case study research in buyer-supplier dyad.

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