

Process design principles in service firms: universal or context dependent? - A literature review and new research directions

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ABSTRACT

The aim of this article is to assess whether process design principles derived from best practices are universally applicable to service organisations or context dependent. This is achieved through a comprehensive review of the Business Process Management (BPM) and Operations Management (OM) literatures. Our comparison of the existing bodies of knowledge in these disciplines reveals major inconsistencies in how the topic of process design in service environments is addressed. Drawing on the more mature, contingency-oriented OM literature we challenge the BPM discipline which prescribes that process design principles derived from best practices are universally applicable irrespective of the context in which the service organisation operates. The results strongly suggest that in the business process design area one size does not fit all service organisations and that some design principles fit better under certain contextual conditions. We then use these findings to

develop a contingency conceptual framework and associated research propositions linking the firm's service strategy context to the use of particular business process design principles. This extends existing theory and provides a platform for future process design research in service organisations that is more closely aligned with the needs of practitioners.

Keywords: Business process management, process design principles, best practices, service operations management, contingency approach, universal view.

INTRODUCTION

In recent years, a plethora of process management approaches, which can be positioned under a generic Business Process Management (BPM) umbrella, have attracted and sustained the attention of many businesses (Grover *et al.*, 1993; Forsberg *et al.*, 1999; Smart *et al.*, 2009). Despite the limited empirical evidence available in the academic literature, many authors report that significant benefits can be attained for companies which implement BPM (Al-Mashari, 2002; Baker and Maddux, 2005). It has been suggested that BPM helps companies develop and sustain competitive advantage in the long run (Hung, 2006). For example, a longitudinal case study conducted by Maddern *et al.* (2007) demonstrates that applying BPM principles contribute significantly to improving service quality and customer satisfaction. Competitive pressures on service organisations have reinforced the need for improved theoretical understanding of those principles.

Business process design is the backbone of the BPM discipline, and the importance of using appropriate process design principles for service companies is well established (Hammer, 2002). Voss and Huxham (2004) point out that “it is hard to find a large organisation that does not pay explicit attention to the design and management of its processes”. Moreover, design is one of the key application components of BPM identified in Smart *et al.*'s empirically grounded model of Business Process Management (2009). Fundamentally, the design of a process aims to provide the capability to deliver the required process performance (Balasubramanian and Gupta, 2005). Since an organisation's value proposition is provided to the customer through operational processes, good business process design is a driver of competitive advantage (Frei and Harker, 1999). A case study by Newman (Newman, 1997) illustrates that process redesign leads to significant improvements in operational performance. Well-designed processes consistently deliver high quality service outcomes to

drive customer satisfaction and customer retention (Johnston and Clark, 2005). The well-established service profit chain model (Heskett *et al.*, 1994), in turn, links customer satisfaction and retention to profitability. Empirical research has broadly supported the linkages between business process design, customer satisfaction, and profitability (Reichheld and Sasser, 1990; Bloemer and Kasper, 1995; Anderson *et al.*, 1997; Ittner and Larcker, 1998).

Business process design involves making decisions about future business processes. According to Hammer (2002), business process design is the conscious organisation of the activities that make up a business process. Balasubramanian and Gupta (2005) define business process design as a set of decisions about the configuration of activities and the role of participants in the process. Design decisions include determining which resources must perform what tasks, in what order, under what circumstances, with what information, and to what degree of precision (Mertins and Jochem, 1999). The BPM literature usually makes a distinction between two alternative situations in which process design takes place (Nwabueze and Kanji, 1997). First, an existing business process may be taken as a starting point for its redesign. Second, organisations may adopt a radical re-engineering approach to entirely redesign the process from scratch. Taking the existing process as a starting point is, in practice, the most common way of developing a business process that improves significantly over the existing one (Aldowaisan and Gaafar, 1999). This paper takes a broad view of business process design and uses the term “design” to encompass all decisions about the configuration of new or existing business processes.

The BPM literature on process design is largely prescriptive (Loch, 1998), and, as Hill *et al.* (2002) note, there are few theoretical analyses of process design in service organisations in the Operations Management (OM) and BPM literatures. Numerous authors provide generic

business process design principles, which are described as being universally applicable to organisations (Harrington, 1991; Hammer and Champy, 1993; Champy, 1995; Madison, 2005; Reijers and Liman Mansar, 2005). Such principles were derived from best practices of business process design used in leading organisations. As pointed out by Sousa and Voss (2008, p. 697), “the proclamation of the universal value of best practices has frequently stemmed from anecdotal case studies of excellent or world class manufacturing firms”. These authors note that a significant body of research shows that the adoption of best practices does lead to superior performance. Nonetheless, the existence of a single best way to manage organisations and operations has been challenged by studies that have found that the use of some best practices did not contribute to improved performance (Powell, 1995; Longbottom and Zairi, 1996; Dow *et al.*, 1999). For instance, Harrington (1997) interrogated a large international database of management practices for robust statistical relationships between the use of best practices and improvements in organisational performance. He concludes that “there is no one right answer for organisations” (p. 11). As the OM discipline has matured, research has sought to specify the contexts in which best practices are more suitable than others. Sousa and Voss (2001) demonstrate empirically that cost leader plants, broad differentiator plants, and focus plants use markedly different quality management practices and that the use of these practices is dependent on the organisation’s manufacturing strategy context. Overall, there is growing empirical evidence that many management practices may be context dependent (Dow *et al.*, 1999; Ketokivi and Schroeder, 2004; Sousa and da Silveira, 2010). A comprehensive review of the manufacturing literature by Sousa and Voss (2008) concludes that OM is strongly oriented towards a contingency paradigm.

The limited academic research addressing the use of business process design principles in service organisations is a serious anomaly given the importance of service activities in

modern economies. There is an urgent need to address this imbalance and to examine the claim that process design principles derived from best practices are applicable to all organisations irrespective of the context in which business processes operate. Consistent with this need, the aim of this paper is to assess whether the business process design principles proposed in the BPM literature are context dependent or universal. This is achieved by reviewing and comparing how the OM and BPM literatures address business process design in service organisations.

The remainder of the paper is organised as follows. The next section provides a review of the BPM literature on process design. This is followed by an analysis of the topic of service process design from an OM perspective which casts doubt on the universality of design principles. A summary of major contributions supporting a contingency approach to process design is provided in this section. We then examine seven design principles proposed in the BPM literature in greater detail through the lens of the existing OM body of knowledge. Propositions for future research are suggested from this comparative analysis. After this we synthesise the findings of the literature review to develop a conceptual framework for future empirical research on business process design before concluding the paper.

PROCESS DESIGN IN THE BPM LITERATURE

The business activity investigated in the BPM literature is a relatively recent phenomenon, and research is in its infancy (Simpson *et al.*, 1999; Hung, 2006). Several authors have recognised the importance of establishing business process design principles and that current theory in this area is limited (Loch, 1998; Hill *et al.*, 2002; Balasubramanian and Gupta, 2005). The academic literature is thinly populated with works discussing how service processes should be configured in terms of activities, flows, and resources. Reijers and Liman Mansar (2005) note that few academic studies give detailed technical directions for designing

a business process. Overall, business process design is not well understood from an academic perspective and remains more art than science (Liman Mansar and Reijers, 2007). Consequently, while good process management is central to the performance of service organisations (Maddern *et al.*, 2007), few empirically derived principles of process design are available to managers involved in service delivery. This may go some way towards explaining why business process design is difficult in practice with published estimates for success averaging ca. 30% (Oakland and Tanner, 2007).

In contrast, the practitioner literature on business process design is more developed (e.g. Galvin and Singer, 1996; Dershin, 2000; Cousins and Stewart, 2002). Hill *et al.* (2002, p. 197) lament its dominance: “a review of the ‘reengineering’ and ‘service process design’ literatures finds thousands of ‘how-to’ managerial articles and company testimonials, but surprisingly few articles published in academic journals”. Like some other management paradigms, BPM has been led mainly by practitioners such as management gurus and consulting firms who adopt a strong prescriptive stance (Kettinger *et al.*, 1997; Nwabueze and Kanji, 1997). Melao and Pidd (2000, p. 111), for example, note that “there are few significant attempts to develop theoretical positions on possible approaches to BPM, possibly because the development of BPM has been driven by practitioners rather than academics”. According to Liman Mansar and Reijers (2007), the lack of established theory has encouraged practitioners to rely on best practices when undertaking business process design initiatives.

Notably, prescriptive generic process design principles, derived from best practices employed in high-performing companies (Loch, 1998), were proposed in influential books in the early Business Process Re-engineering period (Davenport, 1993; Hammer and Champy, 1993). This literature provides an important contribution to the specification aspects of process

design (i.e. determining the design of the process). Hanafizadeh *et al.* (2009) define best practices as successful methods for addressing a problem that may occur in various settings. Similarly, Jarrar and Zairi (2000) state that a proven best practice has been determined to be the best approach for many organisations. In other words, a best practice prescribes the best way to treat a particular problem that can be replicated in most situations or settings (Reijers and Liman Mansar, 2005). This view promotes the universal adoption of best practices, because implementing such tried-and-tested approaches is assumed to lead to improved performance in any organisational context (Zairi, 1997). Business process design principles derived from best practices, therefore, “are universal in the sense that they are applicable within the context of any business process, regardless of the product or service delivered” (Reijers and Liman Mansar, 2005, p. 295). Accordingly, any organisation that rigorously follows these principles is likely to benefit from improved performance, competitive capabilities, and competitiveness. In a broad literature survey, Reijers and Liman Mansar (2005) identify a series of generic redesign principles which are presented as universally applicable (see table 1). A recent survey found that these principles have been extensively applied by practitioners in various organisational environments, such as business planning, healthcare, manufacturing, and software development (Liman Mansar and Reijers, 2007). In short, the universal view assumes that design principles are applicable across all service contexts and advocates a one-size-fits-all approach.

Table 1: Selected business process design principles derived from best practices

Design Practice	Definition and illustration
Eliminate tasks	Eliminate non value adding tasks from a business process (e.g. checks and verification tasks)
Automate task	Replace employees with automated systems to execute process tasks. For instance, implement automatic cashier systems in supermarkets.

Empower employees	Give employees more decision-making authority. For instance, allow sales staff to change the offering to accommodate the needs of high profile customers.
Assign order to whole case worker	Let one employee perform as many steps as possible for single customer requests.
Re-sequence tasks (i.e. optimise process sequence)	Change the sequence of tasks. For instance, a retail bank has moved credit scoring to the front end of the loan application process.
Make resources more specialised or more generalist	Turn generalist employees into specialists or transform specialised employees into generalists. For instance, at a retail bank, specialist jobs such as credit scorer and pricer were combined into a single position “deal structurer”.
Reduce customer contact	Minimise the number of contact points between the customer and the service provider. For instance, an accounts payable process reduced from three customer touchpoints to two.

While many authors recognise the virtues of best practices of BPM (Zairi, 1997; Hammer, 2002), a body of literature suggests that it is possible to have a mismatch between best practices and business strategy. For instance, Silvestro and Westley (2002) find that introducing a process management structure into a functionally organised enterprise can result in increased operational complexity and a duplication of functional expertise. To address these concerns, the authors put forward a contingency approach to BPM deployment based on business strategy. They suggest that a process-based structure is more appropriate for executing a differentiation strategy, whereas functional structures are more beneficial for cost leaders. Pritchard and Armistead (1999) identify the link between BPM deployment and business strategy as one of the key considerations for successful BPM implementation. These views are consistent with Smart et al. (2009), who note that the articulation of a strategic intent to focus on processes has been identified by several researchers (Lee and Dale, 1998; Grover and Kettinger, 2000; Bateman and Rich, 2003; Meadows and Merali, 2003).

Despite the adoption of best practices of business process design across a wide range of industries, Reijers and Liman Mansar (2005) acknowledge that organisations that merely apply these principles are unlikely to experience sustained success as a result. They subsequently argue that more research should be conducted to examine the relevance and applicability of each design principle. This view resonates with Seidmann and Sundararajan (1997), who study the simultaneous application of two business process design principles (i.e. empowerment and task consolidation) using theoretical mathematical models. Their analysis of the effects of these best practices on workflow redesign finds that implementing them in combination does not always lead to improved performance. The authors conclude that business process design may be determined based on the strategy of the service firm. This evidence suggests that different process designs may be optimal for different service strategy contexts and competitive situations. To date, the issue of how strategic context may affect the use of BPM principles in service organisations has received limited academic attention. In the next section, we provide an alternative to existing models of business process design by using the OM literature to investigate the principle of universal applicability.

SERVICE PROCESS DESIGN IN THE OM LITERATURE

A large body of academic knowledge associated with process design in manufacturing environments has been developed in the OM discipline (Loch, 1998). The universal view promoted in the BPM literature contrasts with the contingent approach of management theory in general and of OM theory in particular. Sousa and Voss (2008) argue that the OM field is strongly rooted in a manufacturing strategy contingency paradigm, which advocates consistency between manufacturing strategy choices to increase performance (Voss, 1995). For instance, it is well accepted that design of the manufacturing process is contingent on the volume-variety mix of its products (Hayes and Wheelwright, 1979). Similarly, in a service

operations environment the dominant paradigm advocates a contingency approach emphasising consistency between business strategy and service design to achieve high performance (Heskett, 1987; Kellogg and Nie, 1995; Silvestro, 1999; Goldstein *et al.*, 2002; Roth and Menor, 2003). According to this literature, the design of the service process is driven by contextual factors, and a multitude of contextual variables have surfaced in OM. We conducted a thorough review of the literature drawing both on extant theoretical frameworks and existing empirical findings to produce a comprehensive list of contextual factors that affect process design in service firms. They are synthesised and organised in two broad categories: service concept and customer inputs (see table 2).

First, the service design literature emphasises the importance of conceptual models of strategic service alignment (Heskett, 1987; Armistead, 1990; Goldstein *et al.*, 2002; Roth and Menor, 2003). These models broadly discuss the importance of aligning business strategy, the service concept, and the design of the service delivery process. For instance, Roth and Menor (2003) synthesise an integrated model of service design, the service strategy triad, which posits that the service concept is developed to address the requirements of a target market, and that service concept specifications, in turn, drive design decisions relating to the service delivery process. This argument is supported by Ponsignon *et al.* (2011), who demonstrate empirically that process design characteristics (e.g. skills, automation, employee discretion, front-office back-office configurations) are contingent on the degree of customisation of the service concept. It should be noted that the service concept is often described in the literature as the set of tangible and intangible elements that constitute the service offering (Sasser *et al.*, 1978; Edvardsson and Olsson, 1996). Additionally, previous work suggests that the strategic alignment of the service concept with the service process is a prerequisite for improved performance (Heskett, 1987; Kellogg and Nie, 1995; Karwan and Markland, 2006). A study

by Silvestro and Silvestro (2003) provides empirical evidence that failure to realise the alignment has a detrimental effect on performance.

Second, Sampson and Froehle (2006) state that process design is directly related to the customer inputs supplied to the service delivery process. This perspective emphasises the importance of customer involvement in the service delivery process as the key difference between goods production operations and service provision. Customer involvement refers to the integration of inputs from customers into the transformation process of the service organisation (Moeller, 2008). Three types of customer inputs are identified in the extant services literature (Lovelock, 1983; Fliess and Kleinaltenkamp, 2004): customer self-inputs (e.g. the customer's body and mind), customer's tangible possessions (e.g. the customer's computer for repair), and customer information (e.g. income data for the preparation of a tax return). The Unified Services Theory (UST) suggests a relationship between the type and variability of the customer inputs supplied and process design (Sampson and Froehle, 2006). For instance, it can be argued that high variability in customer inputs prevents process automation and that the presence of customer-self inputs requires the process to be located near the customer. This argument resonates strongly with several authors (Frei, 2007; Moeller, 2008; Moeller, 2010) who recommend that management research and practice focus on the variability of customer inputs as the origin of service process management issues. It should be noted that the degree of customer contact in the process is often seen as an important consideration for service process design (Chase, 1978; Chase, 1981; Chase and Tansik, 1983; Wemmerloev, 1990). Sampson and Froehle (2006) indicate that customer contact equates to customer-self inputs.

Table 2: OM studies addressing contingency factors affecting process design in service firms

Contingency Factor	Studies	Contextual Variables / Definition	Design principle – practice	Performance Variables	Research approach
Service Concept	Heskett (1987)	Service attributes and service outcome	Roles of people, technology, facilities, equipment, service processes, capacity, quality	Customer and employee satisfaction, costs, productivity	Conceptual Strategic service alignment model.
	Goldstein et al. (2002)	Service operation, Service experience, Service outcome, value	Service design decisions (e.g. service encounters and service delivery system design)	Financial, operational, marketing	Conceptual
	Roth and Menor (2003)	“What customers buy and what is important to them”	Structure (equipment, facilities, technology), infrastructure (people, policies), and integration	Competitive capabilities, competencies, and realised service concept	Conceptual Strategic service alignment model.
	Kellogg and Nie (1995)	Customisation of the tangible and intangible elements of service package	Technical and communication skills, employee discretion,	Efficiency and effectiveness (customer service)	Conceptual Service package influences service process.
	Ponsignon et al. (2011)	Customisation of the service concept: complexity of the offering and type of relationship	Type and level of skills, automation, task routineness, task allocation in front-office and back-office, employee discretion	n.a.	Exploratory case study. Development of propositions specifying the contingencies and characteristics of service process design
	Sasser et al. (1978)	Standardization, transaction volume, type of operating personnel, customer contacts, quality control, facilities	People, technology, physical facilities, equipment, and service delivery processes.	Profitability	Conceptual
	Karwan and Markland (2006)	Service concept defined as a set of tangible and intangible elements	Front-office and back-office (focus on the “line of visibility”)	Customer satisfaction, productivity, accuracy	Case study Results support the premises of contingency-oriented models of strategic service alignment.
	Shostack, (1987)	Market positioning	Process complexity (number and intricacy of steps) and divergence (freedom allowed in the process)	n.a.	Conceptual.
Customer Inputs	Silvestro et al. (1992)	Volume: number of customers processed. Variety: people / equipment, customer contact, value-added in front-office, discretion,	Service specification, relationship, resources: people/equipment, task specification, skills, discretion, job completion times, relationship controls, procedures, flexibility	Internal and external performance metrics	Empirically-derived service typology Volume and variety mix affects process design.

	customisation, product/process focus			
Sampson and Froehle (2006)	Type and variability of customer inputs	Service process design characteristics (e.g. automation, facility location)	Efficiency, effectiveness	Conceptual
Frei (2006)	Five types of input variability: requirements, efforts, capability, arrival, and subjective preference	Capacity, Skills, Training, Automation, Reward and penalty system, Self-service,	Efficiency and service	Conceptual, practice-oriented article.
Chase (1978, 1981)	Degree of customer contact	Standardisation, automation, skills	Efficiency and customer service	Conceptual
Buzacott (2000)	Variability in customer demand	Complexity	Efficiency and effectiveness	Conceptual
Huethe and Roth (1988)	Customer contact	Service content (package) and delivery channels	n.a.	Empirical (survey) Shows that customer contact affects service content and delivery channels
Metters and Vargas (2000)	Customer contact and operational focus	Front-office and back-office configurations	Efficiency (costs), customer service	Case study Development of propositions specifying the relationships between strategy and front-office / back-office designs.
Safizadeh et al. (2003)	Front-office / back-office orientation of the process: direct interactions with the customer, both in length and value-added	Labour/capital intensive, utilisation of facilities, routinisation, cross-training, appointment system	Efficiency and low-cost; product and process flexibility	Empirical (survey). Development and test of propositions specifying the existence of contingencies between customer contact and process design
Georgantzas and Madu (1994)	Customization, efficiency, personalization, standardization, variety, and cross selling opportunities	Innovations (teams, self-serve, automation), operational focus (client mix, flow, capacity, demand management), and worker requirements (skills)	Service quality goals	Conceptual The extent of customer contact determines the process design specifications.
Chase et al. (1994)	Customer contact	Technology and people decisions	n.a.	Empirical Reports a relationship between high-contact customer contact services and technology and staffing decisions

One can infer the importance of the congruency between process design and service strategy from theoretical and empirical evidence presented above. Furthermore, Skaggs and Huffman (2003) argue that there are three key service strategy positioning variables in the literature: service adaptability (i.e. extent of customisation of the service concept), service focus (i.e. the breadth of the overall service concept), and customer coproduction (i.e. the extent of customer participation in the service process). These characteristics closely relate to the two categories of contextual variables introduced above, namely service concept and customer inputs. Drawing on Porter's generic framework (1980), the service operations strategy literature (Zahay and Griffin, 2004; Sampson and Froehle, 2006; Frei, 2007), and manufacturing strategy research (Sousa and Voss, 2001; Sousa and Voss, 2008), we therefore synthesise and consolidate the contextual factors in table 2 into a new, general contingency variable, the service strategy context. The service strategy context embodies the major operational characteristics resulting from a service firm's choice of a specific business strategy. This variable comprises four dimensions: "extent of service customisation", "volume of customer inputs", "variability in customer inputs", and "customer relationship strategy". They are essential for planning and executing service delivery processes and are the ones given the most emphasis in the service operations strategy literature (Silvestro, 1999; Roth and Menor, 2003; Skaggs and Huffman, 2003; Frei, 2007).

Several strategic configurations have emerged in the management and operations management literature (Hayes and Wheelwright, 1979; Porter, 1980; Miller and Roth, 1994; Silvestro and Westley, 2002), and there has been substantial agreement on the operational characteristics of those configurations. For instance, the competitive strategy literature dominated by Porter's model of generic strategies (1980) identifies three possible configurations: low cost, broad differentiation, and focus. Each strategic configuration allows

a firm to differentiate itself from its competitors and has a different set of characteristics at the operational level. For a cost leadership strategy, the goal is offering a standardised service concept and reducing costs significantly below competitors. A focus strategy seeks to meet the exclusive needs of a narrowly defined target customer base by providing a highly customised offering. Finally, a firm adopting a broad differentiation strategy strives to provide a wide range of services to a variety of target markets. Although the dominant paradigm for structuring operations management strategy has been established in a manufacturing environment (Menor *et al.*, 2001), these broad configurations appear to be applicable in service organisations (Adam and Swamidass, 1989). Indeed, variables developed for service strategy research have paralleled the ones found in the traditional manufacturing strategy literature (Roth *et al.*, 2008). Table 3 summarises the main operational characteristics of the three generic service strategy contexts. The OM literature suggests that firms representative of different service strategy contexts use different process design principles.

Table 3: The operational characteristics of three generic service strategy contexts

Strategic Configuration	Dominant competitive strategy	Characteristics of the service strategy context
Cost Leader	<ul style="list-style-type: none"> • Offer of a service package at a lower price than similar offerings from competitors • Focus on high-volume, standardised service packages 	<ul style="list-style-type: none"> • Standardised service offering • High volume of customer demand • Low variability in customer inputs • Transaction-based customer relationship
Broad Differentiator	<ul style="list-style-type: none"> • Offer of wide range of services to a variety of markets to develop and maintain large shares in each market 	↕
Focus	<ul style="list-style-type: none"> • Offer of a specialised service package to a particular, narrow customer segment • Differentiation achieved through customisation 	<ul style="list-style-type: none"> • Customised service offering • Low volume of customer demand • High variability in customer inputs • Long-term customer relationship

Adapted from Sousa and Voss (2001)

To summarise, the OM literature supports the existence of a service strategy contingency perspective for process design. This approach contrast sharply with the universal approach of the best practice perspective and raises the question of whether design principles derived from best practices are truly applicable across all strategic contexts.

PRINCIPLES OF PROCESS DESIGN: UNIVERSAL OR CONTEXT DEPENDENT?

In order to address this inconsistency of views on process design, we draw and build on the existing body of knowledge in OM to discuss the applicability of seven commonly cited design principles in the BPM and OM literature in relation to the contingency variables describing the service strategy contexts identified in the previous section.

Automate Tasks

Reijers and Liman Mansar (2005) argue that tasks should be automated since an automated process is faster and more efficient than a process executed by human participants. The benefits from process automation in a service context are well established in the OM literature (Walley and Amin, 1994). Along the same lines as Reijers and Liman Mansar (2005), it has been argued that executing a process through automated systems contributes to improving process efficiency (Hill *et al.*, 2002), and applications of automated equipment have been reported in a variety of service environments (Froehle and Roth, 2004). Further, the role of the internet in offering opportunities for automation has been increasingly recognised in recent times (Boyer *et al.*, 2002; Sousa and Voss, 2006).

Automating process tasks is a well-accepted design principle in efficiency-oriented service factories (Loch, 1998) as well as in rigid processes supporting standardised service offerings (Chase and Tansik, 1983; Ponsignon *et al.*, 2011). The production-line approach to service process design states that in these contexts technology should substitute for people to

maximise efficiency (Bowen and Youngdahl, 1998). As suggested by several authors (Wemmerloev, 1990; Kellogg and Nie, 1995), limited customer input variability and high task repeatability make processes selling standardised offerings more suited for automation than processes supporting customised service concepts. This resonates with Apte and Vepsäläinen (1993), who argue that standardised service concepts are best provided through technology-centred processes.

In contrast, Sampson and Froehle (2006) argue that high variability of customer inputs (e.g. high variety in customer requirements) may prevent process automation, because it is difficult to find technology that is sufficiently flexible. Similarly, Buzacott (2000) suggests that few automated systems are capable of handling customer-induced variability and of delivering highly customised service concepts. This is consistent with the empirical work of Huete and Roth (1988), who find that the potential for automation diminishes as the complexity of service offerings increases. Finally, Apte and Vepsäläinen (1993) argue that a human-centred process is often required to develop and maintain a long-term customer relationship with customers requiring customised service concepts.

Proposition 1

The “automate tasks” design principle is used to a greater extent in Cost Leader service firms than in Focus service firms.

Empower Employees

The rationale for this principle is that managers often spend a significant amount of time on verifying and authorising the work of employees. Decision-making authority should be transferred to the employee to increase the speed of process execution and to lower labour costs (Reijers and Liman Mansar, 2005).

The service process model suggests that the volume-variety mix of customer inputs drives process design decisions in service operations (Silvestro, 1999). Specifically, the author argues that employees' professional judgment and expertise typically replace routine procedures to provide customised services and build long-term relationships with a limited number of customers. Employees often require a high degree of freedom to perform complex tasks, to handle the service encounter, and to assess whether the organisation is capable of providing a unique service concept. Providing customised services and developing long-term customer relationships are the defining characteristics of professional service firms (Silvestro, 1999). These organisations typically follow a focus strategy (Kellogg and Nie, 1995; Silvestro, 1999). Similarly, Buzacott (2000) points out that when customer-induced variability is high, significant decision-making authority is needed to evaluate whether the service offered can actually be delivered. This authority is generally delegated to the service employee (Wemmerloev, 1990). These views are consistent with the work of Bowen and Lawler (1995), who state that empowering employees is likely to be effective in situations where developing close customer relationships is essential.

Buzacott (1990) emphasises that the design of service processes facing limited customer input variability (i.e. where customer requirements are known by the organisation) should not allow employees to make decisions or use judgement in performing their job. Along the same lines, Bowen and Youngdahl (1998) suggest that, for cost-focused service processes, employee discretion should be kept to a minimum, with personnel performing well-defined, standardised tasks under close supervision. There is a broad consensus in the OM literature that employees should exercise virtually no decision-making authority in the context of the efficiency-oriented service factory (Schmenner 1986). Service factory processes usually deal with limited variability in customer inputs and support highly generic offerings (Kellogg and

Nie, 1995; Silvestro, 1999). Finally, Kelley et al. (1996) argue that standardised service concepts are typically provided through processes characterised by “routine” discretion.

Proposition 2

The “empower employees” design principle is used to a greater extent in Focus service firms than in Cost Leader service firms.

Assign order to a single employee

This principle suggests that a single employee perform as many steps as possible in the process of handling customer requests (Reijers and Liman Mansar, 2005). Using this practice is assumed to impact throughput and process efficiency, because the same employee handles a single customer order through a continuous chain of activities, thus eliminating handoffs in the process (Balasubramanian and Gupta, 2005).

Traditional OM theory argues that contact and non-contact jobs call for different sets of activities which are to be allocated to different employees (Chase and Tansik, 1983). This allows front office personnel to focus on customer input variety and back office work to be rationalised and managed for cost reduction and efficiency gains (McLaughlin, 1996). Chase and Tansik (1983) suggest that front office and back office activities should be separated (i.e. decoupled) and staffed with different employees. Zomerdijk and de Vries (2007) and Metters and Vargas (2000) studied task allocation in banking processes containing both customer-contact and non-customer-contact work. These empirical studies have shown that diverse task allocation principles are appropriate to achieve different performance objectives under different strategic conditions. For instance, customer-contact and non-customer-contact activities may be allocated to the same employees to increase efficiency. Tasks may be kept coupled to maximise the productivity of staff through task switching, which enables the

reduction of idle time. This leads to a better utilisation of capacity and a tighter control of costs (Zomerdijk and de Vries, 2007). In contrast, these activities may be allocated to different employees to provide higher service levels rather than to control costs (Metters and Vargas, 2000). Further, evidence exists for design principles where all tasks remain in the front office to achieve lower costs as well as where front office and back office activities are decoupled to enable front office employees to provide better service, rather than to reduce costs. Metters and Vargas (2000) suggest that there is no link between the service offering customisation levels and task allocation. Overall, the literature suggests that task allocation principles are not contingent on service strategy.

Proposition 3

The “assign order to a single employee” design principle is not correlated to the service strategy context of the firm.

Make resources more specialised or more generalist

According to this rule, process design should aim to make employees more specialised or more generalist (Reijers and Liman Mansar, 2005). Although the BPM literature clearly distinguishes between the ranges of tasks performed by these resources, it provides limited guidance as to when it is appropriate to use specialised labour or generalist employees. The OM literature is more informative on this issue. For instance, Bowen and Youngdahl (1998) suggest that, in efficiency-oriented service operations, labour should be divided so that the process can be broken down into groups of tasks to allow specialisation of skills. Similarly, Wemmerloev (1990) argues that, in the context of rigid processes supporting standardised offerings, employees usually perform a limited number of simple tasks. Frei (2007) recommends hiring employees with specialised skills when the service organisation follows a

cost leadership strategy, which consists of purposefully reducing customer input variability. In contrast, flexible processes delivering customised services typically require a worker with generalist knowledge to perform a variety of tasks (Wemmerloev, 1990). This view is echoed by Frei (2007), who advises to “train employees to handle many kinds of requests” when the service organisation’s strategy is to accommodate customer input variability.

Further, the OM literature specifies the nature of the skills required of the service employee in certain situations. The categorisation of skill types into interpersonal and technical skills has been widely adopted (Chase and Tansik, 1983; Wemmerloev, 1990; Silvestro *et al.*, 1992; Kellogg and Nie, 1995). Technical skills are associated with production tasks (e.g. data entry), while interpersonal skills are closely related to communication tasks (e.g. interacting with the customer). Napoleon and Gaimon (2004) posit that employees dealing with standardised service concepts usually have a low skill level and occupy entry-level positions in an organisation’s job family structure. Similarly, according to Wemmerloev (1990), when activities are mostly routine and repeatable the technical skill level of employees is likely to be relatively low. In addition, Kellogg and Nie (1995) suggest that relatively basic communication skills are needed when opportunities for interaction with the customer are limited, as in processes supporting standardised offerings. In contrast the description of professional services (Schmenner, 1986; Silvestro, 1999) indicates that highly qualified people with valuable technical and interpersonal skills are required to address sophisticated and unpredictable customer inputs. Empirical evidence supports the view that employees selling customised offerings and responsible for developing close customer relationships require a great deal of knowledge, typically acquired through years of education and work experience (Ponsignon *et al.*, 2011).

Proposition 4

“Specialist and lowly skilled employees” are used to a greater extent in Cost Leader service firms than in Focus service firms.

Reduce customer contact

This principle suggests reducing the number of contact points with the customer in the service delivery process. It is based on the view that interacting with the customer is time-consuming and that the customer may provide inaccurate information that could disrupt the process. Reijers and Liman Mansar (2005), therefore, argue that reducing the number of contact points leads to faster process execution and improved service quality.

Customer contact issues have been intensively discussed in the OM community since the pioneering work of Chase (Chase, 1978; Chase, 1981). The customer contact model suggests that the potential efficiency of a service system depends on the degree of customer contact and that low- and high-contact processes face different design challenges. High-contact processes deal with customer-induced variability, while low-contact processes, the technical core, are focused on possible economies of scale and maximising process efficiency. The view that processes devoid of customer contact can be made as efficient as assembly lines in manufacturing operations is widely supported by the existing OM literature (Levitt, 1972; McLaughlin *et al.*, 1991; Silvestro *et al.*, 1992; Collier and Meyer, 1998; Verma and Young, 2000).

According to Apte and Vepsäläinen (1993), service organisations choose to engage in different types of relationships with their customers. Typically, standardised service offerings provided by efficiency-driven service factories are associated with a transaction-based customer contact strategy (Kellogg and Nie, 1995; Silvestro, 1999). These service contexts are characterised by limited contact points between the customer and the organisation, and

encounters are typified by short time exchanges (Rao and Perry, 2002). In contrast, it has been argued that, in the case of professional services (Schmenner, 1986; Silvestro *et al.*, 1992; Kellogg and Nie, 1995), the service provider and the customer develop a close, long-term relationship typified by a multiplicity of touch-points before, during, and after service delivery. Customised service concepts are often associated with a relationship-based strategy which consists of building long-term partnerships (Rao and Perry, 2002). In their case study of a large electricity supplier, Ponsignon *et al.* (2011) find that offering a customised service concept to high-profile customers involves developing a personalised relationship with the customer's representatives. They report that frequent encounters take place on an ongoing basis between the contract manager and the customer to co-develop the service offering, to define service level agreements, and to discuss new customer requirements. It is arguable that reducing the opportunities for information exchanges would make it more difficult for customers to precisely detail and communicate their requirements.

Proposition 5

The “reduce customer contact” design principle is used to a greater extent in Cost Leader service firms than in Focus service firms.

Eliminate Tasks

This principle consists of eliminating unnecessary tasks from a business process to increase processing speed and improve process efficiency (Reijers and Liman Mansar, 2005). Identifying and eliminating non-value-adding process steps is a defining characteristic of the lean approach, which promotes waste elimination from the value chain of activities (George, 2003). According to lean principles, any process tasks that do not add value from the customer's perspective should be removed (Bowen and Youngdahl, 1998). Lean is a

comprehensive production management philosophy encompassing a range of universal principles to manage and develop processes. The methodology originated in a manufacturing environment where it has been very successful in the past twenty years. Lean has also been widely applied in various service environments, such as health care, the airline industry, and financial services (Swank, 2003; Antony *et al.*, 2007; Wanga and Chenb, 2010). Piercy and Rich's (2009) review of the development of lean service reveals that significant performance improvements were achieved in service organisations that applied the same lean design principles as did manufacturing organisations. Although the applicability of the whole set of lean methods, principles, and practices to service organisations is still debated (LaGanga, 2010), prescribing the removal of non-value-adding steps from the service delivery process is the subject of little controversy. Lean principles are so well established in the OM literature that the book that introduced the term "lean production" has been one of the most widely cited works in OM over the last decade (Holweg, 2007). Our survey of the OM literature does not identify instances contradicting the universal applicability of this principle in service environments.

Proposition 6

The "remove non-value-adding tasks" design principle is used to a similar extent in Cost Leader service firms, in Broad Differentiation service firms, and in Focus service firms (i.e. it is universal).

Re-sequence Tasks

This principle proposes moving tasks to more appropriate places to reduce costs (Reijers and Liman Mansar, 2005). The OM service literature emphasises that there may be significant differences in the execution of the sequence of tasks in service delivery processes. For

instance, Wemmerloev (1990) distinguishes between rigid processes characterised by a fixed ordering of tasks and fluid processes in which the order of tasks is not known for certain in advance. Similarly, service factory processes supporting standardised offerings are assumed to follow a fixed and predetermined sequence of steps, while professional service processes delivering customised services are executed with greater flexibility and adaptability (Kellogg and Nie, 1995). According to Collier and Meyer (1998), in certain service environments, such as parks, museums, and health clubs, customers are given the opportunity to design their own activity sequence in any order they choose. They define the activity sequence as “all the process steps and associated service encounters necessary to complete a service transaction”. Collier and Meyer also argue that, in other environments such as fast food restaurants and retail banking, customer freedom in selecting activity sequence may be highly constrained by the process design. This view comes close to Shostack’s (1987) process divergence concept, which refers to the degree of freedom in the sequence of process tasks to be completed. Despite acknowledging that a variety of task orderings may be appropriate in different service contexts, the OM literature provides limited guidance as to whether a set of tasks should be performed in a specific order and how the sequence of tasks should be determined. Further, the lean service literature offers support for the broad applicability of the “re-sequence tasks” design principle. Piercy and Rich (2009) note that ensuring the seamless flow of tangibles and information through the various tasks and steps that comprise the process is a pillar of the lean approach to process improvement. The activity work sequence is captured in a map or flowchart which can then be used as a basis for process redesign (Lee and Chuah, 2001). Our review of the OM literature suggests that the “re-sequence tasks” principle may be universal.

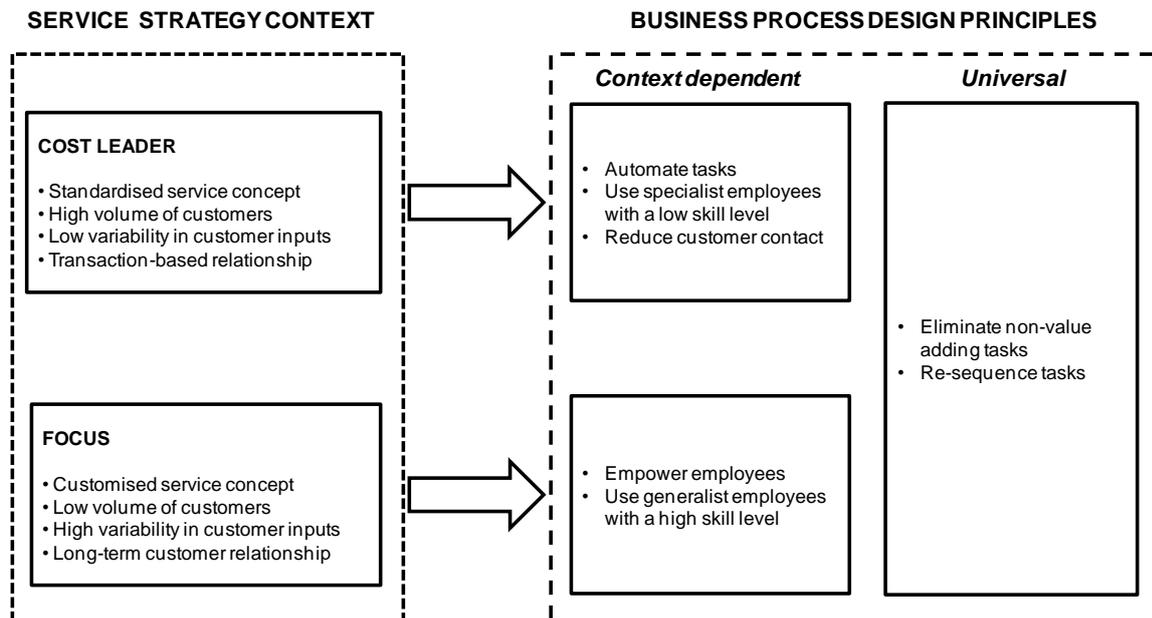
Proposition 7

The “re-sequence tasks” design principle is used to a similar extent in Cost Leader service firms, in Broad Differentiation service firms, and in Focus service firms (i.e. it is universal).

A CONTINGENCY-BASED FRAMEWORK FOR FUTURE BUSINESS PROCESS DESIGN RESEARCH IN SERVICE ORGANISATIONS

To summarise, our analysis suggests that most of the business process design principles presented in the BPM literature as universally applicable may actually be context dependent. One can infer from the conceptual and empirical OM academic literature that the design principles of “task automation”, “customer contact reduction”, “generalist/specialist resources use”, and “employee empowerment” may be contingent on the service strategy context of the firm. In contrast, the principles of “task elimination” and “task re-sequencing” may be universal. Finally, the “assign order” practice appears does not appear to be directly related to business strategy. We therefore propose a new conceptual model for business process design in service firms based on these findings. The conceptual model is depicted in figure 1. It focuses on the contingent relationship between the use of process design principles and the service strategy context of the firm. This framework is consistent with the work of several authors who have developed propositions linking the strategic context of the firm to the operational characteristics and design principles of the service organisation (Kellogg and Nie, 1995; Metters and Vargas, 2000).

Figure 1: A contingency-based model for business process design in service organisations



The arguments provided in the previous sections, the set of propositions, and the associated conceptual framework introduced above can be used as a platform for theory development in the process design area. Consistent with the findings of the literature review, our propositions link the strategic context of the service firm to the use of business process design principles. These hypotheses directly address the influence of context on process design principles. These propositions now need further research and a theory-testing approach to empirically establish what service process design principles are universal or context dependent. We suggest that quantitative theory-testing research across a variety of service firms is required to establish statistically the generalisability of these propositions. To test the contingency of business process design we propose to examine the extent to which the particular design principles are used in service firms representative of the two polar strategy contexts (i.e. Cost Leader and Focus). Such a study will seek to uncover the existence of differences in the use of principles at a detailed level, specifying the effects of different strategic contexts on individual process design.

Future empirical work will have to consider two important issues. First, contingency studies typically include a measure of performance to assess the degree of fit between context and practices (Drazin and Van de Ven, 1985; Zeithalm *et al.*, 1985; Vandermerwe and Rada, 1988; Sousa and Voss, 2008). Contingency studies seek to establish whether the use of particular practices is more successful in certain contexts than in others. While the impact of the right fit between the service strategy context and the process design principles employed should be reflected in the process's overall performance, our framework does not allow for a direct measurement of performance. We agree that the appropriateness of the match between process design and context is relevant only if the use of the practice is successful (i.e. if it contributes to improved performance). Directly measuring the impact of design principles on process performance, however, poses some problems. The difficulty of measuring the success of the use of OM practices at the process level was noted by Field *et al.* (2006), who emphasise that collecting robust and reliable process performance data is not easy. This issue surfaces in an empirical study by Safizadeh *et al.* (2003) in which the authors use a perceptual measure of performance to evaluate service delivery processes in the financial services sector. These authors mention that they could not obtain an objective process-oriented measure of performance: "by performing the analysis at the process-level, there is no external or maybe even internal source for obtaining objective measures". In addition, assessing the fit between principles and context would require an examination of the impact of a particular practice, taken in isolation from other design principles, on performance. Most organisations involved in process design efforts typically apply a range of techniques simultaneously. This offers limited opportunities for evaluating the effect of an individual design principle on process performance.

Since directly measuring the impact of design principles on process performance may not be feasible, we propose that the firms selected to take part in the research would need to be assumed to be under fit. In organisations under fit context and operational practices (e.g. process design, quality management) are assumed to be aligned, and operational performance is assumed to be high. We suggest that, to be considered under fit, organisations will have to meet two criteria. First, it will be important to identify leading companies in a variety of highly competitive sectors. It is generally accepted that aligning business strategy and service process design is a pre-requisite for increased competitiveness and higher performance (Roth and Menor, 2003). Empirical evidence suggests that the congruency of operational elements with the service strategy is of great importance for achieving high performance (Smith and Reece, 1999). It therefore seems legitimate to expect that context and design principles fit together more closely in high-performing organisations than in ordinary performers. Consequently, market leaders in competitive industries will be sought out. Second, selected companies will need to have been deploying a business BPM programme for several years. Organisations that are heavily involved in a BPM programme are considered to have gone some way towards the implementation of successful design principles. It is more likely to obtain useful insights about the successful use of process design principles from organisations which can be described as mature regarding BPM implementation and deployment. As pointed out by Sousa and Voss (2001), this assures, on the one hand, that the organisation has had the time to implement the practices it deems suitable to its context. It will have made an informed decision on the principles it uses. On the other hand, a BPM-mature organisation is able to make a sound assessment of the success of using the individual, particular design principles.

Second, the proposed research framework focuses primarily on the “cost leader” and “focus” types, which do not provide an accurate representation of all possible business strategies. The

choice of service strategy contexts situated at opposite ends of a strategy continuum leaves a large space in the middle which will not be investigated. While this is an important limitation, we believe that the research design is appropriate for future empirical work aiming to establish whether or not service companies use the same universal set of practices for business process design. We argue that, by focusing on two polar strategy contexts, the research is more likely to highlight the similarities and differences in the design of individual service delivery processes with respect to context. This approach makes it possible to determine if contrasting principles are used for processes operating in markedly different contexts.

CONCLUSION

While there has been significant interest in contingency questions in the manufacturing strategy area (Bozarth and McDermott, 1998; Boyer *et al.*, 2000; Boyer and Lewis, 2002; Boyer *et al.*, 2005), few studies have focused on the relationship between BPM principles and service strategy. The limited academic research focusing on process management in relation to the strategic context of service organisations is a serious anomaly given the importance of service activities in modern economies. This paper has examined the claim that process design principles derived from best practices are universally applicable irrespective of the contexts in which business processes operate. A contingency-based framework for process design research was developed through a comprehensive review and comparison of how the OM and BPM literatures deal with business process design in service organisations.

This paper makes two significant contributions to the theory and practice of business process design. First, major theoretical inconsistencies in the BPM and OM literatures with regards to business process design in service firms are identified and analysed. The results strongly suggest that in the business process design area one size does not fit all service organisations

and that some design principles fit better under certain contextual conditions. Principles derived from best practices of business process design are not universally applicable. We propose to link the use of design principles to context, because many business process design principles may be contingent on a firm's service strategy. The paper integrates and synthesises existing knowledge from the OM and BPM disciplines to develop a contingency-based conceptual model and associated research propositions. The framework postulates a contingent relationship between service strategy context and business process design. This is consistent with the contingency view of the strategic choice paradigm that permeates the OM literature and sharply contrasts with the universalistic approach of the best practice perspective found in the BPM literature. To extend theory in this area, future work is needed to empirically test the relationship between service strategy context and process design principles. This represents a promising research avenue for both OM and BPM scholars. In connection to this, we have identified a limited set of contingent variables (i.e. service customisation, customer input volume, customer input variability, and customer relationship) that distinguish between service strategy contexts. This is an important first step toward robust empirical research on the application of process design principles in service firms.

Second, this research has useful implications for the practice of business process design. The findings can serve to inform the use of business process design principles and help managers make appropriate, evidence-based design decisions. We suggest that the universal approach to process design advocated in the BPM practitioner literature may provide misleading advice about the design requirements of service delivery processes. In contrast, the research framework and propositions put forward in this paper can help managers to determine what design principles to apply by specifying the contexts in which the use of certain principles is appropriate. Our future theory-testing research work will strive to provide managers involved

in the delivery of service with empirically derived principles of process design. Producing prescriptive knowledge to advise managers on the conditions where to apply particular principles is extremely valuable to the practitioner community. Additionally, managers may use the insights derived from this review to evaluate the appropriateness of the design of existing processes. Assessing the alignment between service strategy and existing process designs can help operations managers determine whether the right processes are in place to provide the service to the customer.

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