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Open Innovation

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Abstract

Originally offered as a normative managerial framework for improving a firm's innovation performance, open innovation has since evolved to encompass a wide range of innovation practices and phenomena, both new and existing. What is common is that they involve innovation-related knowledge crossing the boundaries of a firm (or other organization) to improve its performance. These flows may be monetized or free, inbound or outbound or both, transactional or relational. The practice of open innovation is not about maximizing these flows, but optimizing them to be neutral about external versus internal sources or commercialization paths for an organization's innovations.

Definition

Open innovation is about how an organization utilizes knowledge flows that cross organizational boundaries to improve the success of the organization's innovation efforts. These flows may be inbound from and/or outbound to its external partners which may be organizations, individuals or networks – and are motivated by monetary or other incentives.

Open innovation (OI) was proposed in the early twenty-first century as a strategy to help firms maximize returns from their innovation investments. Acknowledging that valuable knowledge is widely distributed across society, it encourages organizations to intentionally direct and harness knowledge flows across organizational boundaries in order to find new sources of innovation and new paths for commercializing innovations. It was rapidly adopted in practice and studied by researchers seeking to explain how and when such practices improve firm performance (Chesbrough and Bogers 2014). More recently, researchers have shown how open innovation both builds upon and contributes to other areas of research, particularly in innovation strategy (West et al. 2014).

The Emergence and Evolution of Open Innovation

In his first *Open Innovation* book, Henry Chesbrough defined open innovation as a paradigm where 'firms can and should use external ideas as well as internal ideas, and internal and external paths to market' (Chesbrough 2003: xxiv). The book illustrated the concepts using examples from large innovative companies such as Xerox PARC, IBM, and Intel, and suggested a redefinition of the role of the R&D organization.

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Open innovation primarily focuses on two processes: the inbound flow of innovations (and other knowledge) into the firm, and the outbound flow of innovations and knowledge from the firm (Dahlander and Gann 2010). Thus far, researchers have more often studied inbound flows than outbound flows (West and Bogers 2014).

The emphasis of open innovation is on inbound or outbound paths that cross firm boundaries – or as West (2011: 144) put it, 'employ[ing] markets rather than hierarchies to obtain and commercialize innovations'. However, the normative Chesbrough model was never that these external paths replace the internal ones, but that firms remain somewhat agnostic in their choice between internal and external approaches (Chesbrough and Teece 1996), favoring internal only in circumstances where 'pacing' or contractual issues might arise.

The original focus on large firms was later extended to small and medium firms (van de Vrande et al. 2009; Brunswicker and van de Vrande 2014) and not-for-profit entities (Dahlander and Gann 2010; Chesbrough and Di Minin 2014). Reflecting the latter extension, Chesbrough's latest definition is 'open innovation as a distributed innovation process based on purposively managed knowledge flows across organizational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organization's business model' (Chesbrough and Bogers 2014: 17). Others have shown how the principles of open innovation can enable and harness knowledge flows within an organization (e.g., Guinan et al. 2013).

Contrast to Other Innovation Models

While open innovation is positioned in contrast to the Chandlerian model of ▶ vertical integration, there are numerous antecedents in prior research on innovation, economics and strategy (Chesbrough 2006). In many ways, it harkens back to the distributed model common before the emergence of post-Second World War ▶ multinational corporations (Mowery 2009; Chesbrough and Bogers 2014).

For the outbound model, a crucial antecedent is Teece's (1986) ▶ profiting from innovation framework, by which innovative (often young and small) firms rely on external partners when they are unable to commercialize technology themselves. Chesbrough and Rosenbloom (2002) demonstrated how a variety of Xerox PARC technologies were commercialized via licensing, creating spinout companies and other approaches. Many such approaches assume (if not depend upon) the availability of ▶ markets for technology.

Meanwhile, the inbound use of external innovation from a variety of outside partners was the focus of the early work of von Hippel (1988), who examined the role of customers and suppliers in generating new ideas for manufacturers. In fact, open innovation is often confused with von Hippel's ▶ user innovation paradigm – such that von Hippel (2005) coined 'open distributed innovation' as a synonym for user innovation, to contrast it with the strong appropriability of the Chesbrough model. Both have an overlapping interest in innovation sources outside the firm, including crowdsourcing. However, OI focuses on the benefits to the firm (rather than users), profiting from innovation (rather than meeting user needs) and private (rather than collective) control of the returns to innovation (Piller and West 2014).

In some ways, the focus of open innovation is broader than that for user innovation. Open innovation and user innovation are respectively associated with monetary and non-monetary motivations (Piller and West 2014), but non-monetary motivations are also important for OI if they will provide a supply of inbound knowledge flows (West and Gallagher 2006; Dahlander and Gann 2010). Finally, firms that work with user innovators are working with individuals – whether consumers or employees of other firms – but firms practising OI may work with individuals, firms, other organizations, networks or communities (Vanhaverbeke et al. 2014).

Open innovation can also be confused with ▶ open source software. However, most OI strategies don't fit the open source production model,

and some open source efforts more closely resemble user innovation (West and Gallagher 2006; Piller and West 2014).

Inbound

The inbound mode of open innovation is the most commonly researched mode of open innovation, more than twice as common as the outbound mode (West and Bogers 2014). Some of this because of this has been due to popular new approaches for external sources of innovation, such as crowdsourcing (e.g., Boudreau and Lakhani 2013). It may also be because firms appear to be less interested in (or able to) outlicensing technology, and instead seek inbound flows that increase the potential supply of innovations.

Externally sourced innovations may comprise inventions, other forms of technical knowledge (whether or not protected by patents), components or other information that enhances the firm's innovation efforts. West and Bogers (2014) concluded that the inbound mode comprises three phases: obtaining innovations, integrating them into the firm's goods/services, and commercializing those offerings in the market – but that most research has studied the first phase.

Obtaining external innovation involves two steps. The first is searching for external sources of knowledge: research has examined which sort of partners (suppliers, customers, rivals, universities) supply innovation, how wide or deep the firm's search is, and how that search relates to performance (e.g., Laursen and Salter 2006). More recently, researchers have distinguished between the direct and indirect knowledge search strategies, with the latter searching for partners that can provide the desired knowledge (Diener et al. 2015). The second step is acquiring the innovation, typically through formal licensing or other contractual agreements (e.g., Laursen et al. 2010). Research on the third step has examined actors that enable such sourcing and acquisition, including contests, innovation platforms, brokers and other intermediaries, toolkits and filtering mechanisms (Füller et al. 2008; Jeppesen and Lakhani 2010; Boudreau and Lakhani 2013). Originally research emphasized maximizing the quantity of available innovations, but recently researchers have looked at improving the quality of available innovations, such as by crowdsourcing the filtering and selection process (King and Lakhani 2013).

Integrating is the second step, when the externally sourced innovation is brought into the firm's innovation efforts (often to the R&D organization). One barrier to incorporating external innovations is an organizational culture of rejecting innovations that are 'not invented here' (Antons and Piller 2015). A factor behind such NIH may be the very real concern that external sourcing substitutes for funding internal capabilities; while ▶ absorptive capacity argues for funding (at least minimal) internal capabilities to allow incorporation of external, the issue of substituting versus complementing remains an open empirical question (West and Bogers 2014).

Commercializing is the final step, when firms bring these innovations to market. Research prior to open innovation tended to assume that the paths (and metrics) for external innovations are the same as for internal ones, but that also is an open empirical question (West and Bogers 2014). Using existing metrics of innovation performance, researchers have established the impact of external innovation upon value creation (Chesbrough and Crowther 2006; Laursen and Salter 2006; Grimpe and Sofka 2009) and also upon value capture (Rothaermel and Alexandre 2009; van de Vrande et al. 2009; Du et al. 2014).

Outbound

While most of the subsequent attention of open innovation focused on inbound knowledge flows, the original impetus for came from outbound flows, specifically how and why corporate entities (such as Xerox PARC) should commercialize their technologies through other firms (cf. Chesbrough and Rosenbloom 2002). Such commercialization might take place by out-licensing to an existing firm or creation of a spinout company.

Chesbrough concluded that since firms will succeed at commercializing innovations that fit their ▶ business model, they run the risk of making a Type II (false negative) error in evaluating innovations: just because an innovation doesn't fit their business model, doesn't mean that it lacks commercial potential. Outbound OI provides a way for the firm to unlock the value of an innovation that would otherwise be lost (Chesbrough 2003, 2006).

The outbound knowledge may be protected by formal intellectual property – such as a patent or trade secret – and transferred to external partners via exclusive or non-exclusive ▶ licensing. In some cases, the technology will be incorporated into tools or components sold to other companies for use in developing their own goods and services (West 2006).

The ability to use such licensing and markets is closely tied to firm appropriability strategies. Building on Teece (1986, 2006), the initial focus of outbound OI was for innovations protected by intellectual property or other forms of appropriability (Chesbrough 2003; West 2006). Some firms voluntarily waive appropriation value from their outbound flows, when such flows enable knowledge trading, adoption or other firm goals (Dahlander and Gann 2010; Henkel et al. 2014; Laursen and Salter 2014; West et al. 2014).

Coupled Interactions Within Networks and Ecosystems

The inbound and outbound modes of open innovation were extended by Gassmann and Enkel to include a 'coupled' mode, in which a firm combines inbound and outbound knowledge flows from interfirm collaborations such as strategic alliances (Enkel et al. 2009). This coupled process also includes collaborations outside the firm (such as co-creation) where the firm and its external partners combine knowledge to create new innovations (Piller and West 2014).

While many ▶ alliances are between two firms, more often they are part of a network of relationships around the focal firm. Firms manage such networks as part of an open innovation strategy to orchestrate joint value creation for prospective customers (Vanhaverbeke and Cloodt 2006). Such OI networks may take the form of innovation communities, research consortia, ▶ business ecosystems or platforms (West 2014).

These networks often require a central firm to lead and coordinate a process of ▶ systemic innovation. A major challenge is aligning the conflicting value capture interests of member companies. In particular, platform strategy requires firms to balance their own objectives against incentivizing the participation of suppliers of ▶ complementary assets and other parts of the value proposition (West 2014).

These coupled collaborations also require carefully monitoring the inbound and outbound flows, particularly when the former can lead unintentionally lead to the latter. Conversely, fears of outbound flows may hamper the ability to access inbound flows: Laursen and Salter (2014) found that weak ▶ appropriability limits external search, breadth of collaboration (particularly with rivals), and even the ability to use absorptive capacity to acquire external knowledge.

Future Research

After its first decade, open innovation has a number of potential avenues for future research (Vanhaverbeke et al. 2014; West et al. 2014). These include: improved measurement of OI relationships and outcomes; whether inbound OI is a complement or a substitute for internal innovation; understanding the individuals and organizations providing inbound innovations; more fully integrating OI with established theories of strategy, economics and other social sciences; the moderating role of appropriability in OI strategies; the practice of coupled OI; beyond OI's original emphasis on dyadic interfirm exchange, the use of OI at other (and multiple) levels of analysis; use of OI with non-pecuniary motivations and by not-for-profit actors; extension of OI beyond R&D to other functions (such as HR and legal).

Early research tended to emphasize the benefits of open innovation, and only recently have

researchers considered its possible disadvantages (West and Bogers 2014). For example, Faems and colleagues (2010) found that relying on external sources of innovation decreased profitability because the costs of external collaborations exceeded the incremental value created. Still, many opportunities remain for identifying the moderators and boundary conditions for the effectiveness of open innovation.

See Also

- ▶ Absorptive Capacity
- ▶ Alliances
- ▶ Appropriability
- ▶ Business Ecosystem
- ▶ Business Model, the
- ▶ Complementary Asset
- ▶ Innovation Strategies
- ▶ Licensing
- ▶ Markets for Technology
- ▶ Multinational Corporations
- ▶ Open Source
- ▶ Profiting from Innovation
- ▶ Systemic Innovation
- ▶ User Innovation
- ▶ Vertical Integration

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Open Source

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Abstract

The term open source (OS) comprises all the practices (technological, organizational and legal) that ensure to anyone the rights to execute, copy, modify and distribute a piece of computer software, thanks to the availability of its source code. These practices have had profound effects on the ▶ software industry and have been a fertile ground for theoretical and empirical work on the part of strategic management scholars. We review some of the insights of strategic management research on OS, focusing on three main streams of studies: (1) OS as ▶ innovation, (2) OS communities' governance and organization, and (3) OS competitive dynamics in the software industry.

Definition The term open source (OS) software refers to the practices (technological, organizational and legal) that ensure to anyone the rights to execute, copy, modify and distribute a piece of computer software, thanks to the availability of its source code.

Open Source in Strategic Management

The first explicit formulation of users' freedom to execute, copy, modify and distribute software is due to Richard Stallman in early 1980s (Stallman 1998). But the concept of open source (OS) diffused widely with the fast growth of the GNU/Linux operating system and the spread of

Internet access, especially over the 2000–10 decade. By 2011, for instance, 62% of servers providing web access were running the open source web server Apache (Netcraft 2011) and 82% of top 500 supercomputers in the world were running GNU/Linux (Top500.org 2011).

The roots of the concept run deep in the history of computing and are tightly tied to the dynamics of scientific communities. Before the 1980s, software was openly shared among users, and access to the source code was the norm (Levy 2001; Weber 2004). By 1990s, the ▶ software industry, to capture more value, had almost completely eradicated this practice and most software did not grant access to the source code, thus severely limiting its distribution and modification. In this context, OS re-emerged as an alternative model of software production and distribution. In the OS model, software is conceptualized as a public good: its use is non-rival, and its licence ensures that private intellectual property rights will not hinder developers' and users' ability to use, modify and redistribute it (O'Mahony 2003).

Strategic management scholars found the OS phenomenon fascinating for a number of reasons. First and foremost, from an ▶ innovation standpoint, the phenomena seemed to run counter to some well-established precept in the field on the role of strong intellectual property (IP) protection to foster innovation. Second, organizational researchers marvelled at the ability to attract highly technical volunteer work, coordinate their effort, and create sustainable communities without resorting to the corporate form. Finally, from a competitive dynamics perspective, OS represented an alternative business model within the software industry, and has been a fertile ground to explore the relationship between different models. We will address these areas in turn.

Innovation Strategy and OS

The success of OS has showed the strengths of its development process in terms of the quality of the products obtained and the time frames and resources needed to produce them (Lerner and Tirole 2002, 2005; Wheeler 2004). The fact that big firms – such as IBM, Intel and Google – have been involved in supporting and developing OS, which increasingly is a key part of their infrastructure or their sales strategy (Bradski et al. 2005; Capek et al. 2005; Samuelson 2006; Bryant 2007; Gawer and Henderson 2007; Alpern et al. 2010), has been a puzzle for management scholars. This contradicts the classic assumption that a weak regime of appropiability undermines the incentives of firms to invest in R&D in order to improve their products and to release new ones that contribute to innovation in the field. Thus, many researchers have wondered how OS projects are able to innovate, in order to solve complex technical problems, and freely reveal those innovations without appropriating private returns from selling the software.

One of the first approaches to this problem builds on the analytical distinction between two models of innovation. On the one hand, the 'private investment' model assumes returns to the innovator from private goods that are strongly protected with efficient regimes of intellectual property. On the other hand, the 'collective action' model assumes that, under conditions of market failure, innovators collaborate in order to produce a public good (Von Hippel and Von Krogh 2003). OS development is an instance of a compound model of innovation that contains elements of both models and can offer society the 'best of both worlds' under many conditions. Thus, these two analytical models are not discrete states but two ends of a continuum.

But, how do firms position themselves in this continuum? Building on Teece (1986, 1992), Fosfuri et al. (2008) argue that firms can profit from their investment in OS by relying on the control of complementary resources, and that the heterogeneity in the distribution of such resources explains why some firms take more OS commercial actions than others: OS implies a reduction of the level of protection of the core product, which forces firms to secure the control of complementary resources to benefit from their commercialization efforts. They show that variations in firms' endowments of intellectual property rights are associated with the likelihood of releasing OS software packages. More specifically, they studied

the release of software packages under OS licences between 1980 and 2003 and found that firms were more likely to release OS products if they had (a) a larger stock of pre-existing software patents, and (b) a smaller stock of preexisting software trademarks. While patent protection of complementary assets might help firms capture some of the value created with innovative OS software releases, firms still need to cooperate with the emerging communities of OS developers in ways that fit their business models. Dahlander and Wallin (2006) showed that software firms sponsor individual developers in OS software communities in order to influence their development.

Governance and Organization of OS Communities

Beyond the issue of collaboration with corporations, OS communities provided researchers with a number of interesting organizational puzzles. At the individual level, research on OS has focused on why talented software developers decide to work, in many cases, for free in OS projects (Lakhani and Wolf 2005). The literature has mainly stressed three compatible responses to the motivational puzzle. First, from the point of view of developers participating in OS projects, 'scratching an itch' (Raymond 2001: 23) is a commonplace response to this puzzle. To work in something that is considered interesting and useful is a powerful motivation. Second, because the work in OS projects is public and visible, developers can build a reputation based on their achievements. Reputation is an important currency in a highly technical field where the work of developers is hidden in the black box of closed source. Thus, reputation and professional development are also powerful motivations (Lerner and Tirole 2002; Lakhani and Wolf 2005; Bagozzi and Dholakia 2006; Roberts et al. 2006). And, finally, a stream of research has stressed that it is useful to conceptualize OS as a gift economy, where shared ethical and moral standards play a key role in boosting participation and commitment (Coleman 2004). Developers' participation is only one of the many organizational and governance challenges of OS developers' communities. The traditional scalability problems of software projects (Brooks 1995) should only be more critical when coupled with purely voluntary participation. Defying these gloomy predictions, OS communities kept growing, with some of them counting on the contribution of thousands of developers every year. Inspired by the software engineering approach, some scholars suggested that a modular structure of OS code is key to the scalability of these communities (Lerner and Tirole 2002; Mockus et al. 2002; MacCormack et al. 2006).

Another important stream of research has focused on the governance structures and leadership dynamics of OS communities. For ▶ open innovation communities, Fleming and Waguespack (2007) find that future leaders must first make strong technical contributions. They also must integrate their communities in order to mobilize volunteers and avoid the danger of forking and balkanization. This is enabled by two correlated but distinct social positions: social brokerage and boundary spanning between technological areas. O'Mahony and Ferraro (2007) suggest that OS communities might need to blend bureaucratic and democratic mechanisms to achieve a functioning governance structure that will allow them to adapt to internal and external changes.

West and O'Mahony (2008) focus on the relationship between corporations and communities. They go beyond the code structure and development approach, and stress the role of IP rights and model of community governance in shaping what they call the participation architecture of different OS communities: the socio-technical framework that facilitates contribution from developers in the community and integrates their contributions in the software offering of the corporation.

Competitive Dynamics

Despite the impact of OS on the software industry in terms of competitive dynamics, very few studies have directly explored how proprietary and

open source software interact in the marketplace. Casadesus-Masanell and Ghemawat (2006) model the Linux vs Microsoft Windows competition as a dynamic mixed duopoly in which a profit-maximizing competitor interacts with a competitor that prices at zero. In their game, the main advantage of OS is the ability of users to modify the source code directly, solving problems and improving it (i.e., faster demand-side learning). The main advantage of Microsoft Windows is its large initial installed base. In the model of Casadesus-Masanell and Ghemawat, as long as Windows has the advantage of a larger installed base at time zero, Linux never displaces Windows' leadership position. Building on this basic result, they investigate the conditions that would allow Linux to succeed in the marketplace, and suggest that commitment by governments and large corporations could help Linux overtake Windows. Furthermore, and more counterintuitively, they suggest that piracy might actually help Windows maintain its dominance, by artificially inflating its installed base. They confirm this prediction with data on a cross-section of countries on Linux penetration and piracy rates and find out that in countries where piracy is high, Linux has a low penetration rate.

Future Research

Given the impact OS has had on our computing infrastructure and how it is revolutionizing the computer industry, it is not surprising that it has attracted the attention of academics beyond the confines of strategic management. Computer scientists and IS scholars have explored the technological factors enabling this growth and the software engineering practices that emerged in this space (Koch and Schneider 2002; Mockus et al. 2002; Michlmayr et al. 2007; Scacchi 2007). Legal scholars have focused on the role of different licensing schemes and their implications for intellectual property and culture (Lessig 1999; Benkler 2002; Moglen 2003; Carver 2005). Given the scope of this entry, we have not referred to this work in detail, but we do believe that future research should try to integrate findings from different disciplines. Leveraging what we are learning from OS communities to the broader problem of organizing innovative activity is another key direction for future studies, which should explore what is specific to software and what can be applied to other domains of activity.

See Also

- ▶ Collaborative Innovation
- ▶ Innovation
- ▶ Licensing Strategy
- ▶ Open Innovation
- ▶ Software Industry

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Operations Management and Strategy

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Abstract

Strategy and operations are inextricably connected: strategy is a plan to reach an objective and operations is the means of getting there. Operations management involves the planning and coordination of work. Strategically, this involves the long-term planning and structuring of work. Indeed, the task of operations strategy is to design the *operating system,* which is the joint configuration of resources and processes, such that its resulting competencies are aligned with the organization's

desired competitive position. Tactically, the task of operations management is to utilize the operating system and provide the best match of supply with demand.

Definition Operations management involves the planning and coordination of work. It is especially concerned with the creation and delivery of products and services and with providing the best match of supply with demand. Operations strategy involves the long-term planning and structuring of work by configuring appropriate resources and processes into an operating system that best implements the organization's strategy.

Operations Management and Strategy

The word operations stems from the Latin verb *operari* and noun *opus*, which mean (to) work.

Operations simply are activities, but it is typically understood that these activities are planned and coordinated, given that they often require a number of capital and human resources. Managing operations involves structuring and coordinating work. While this includes and is applicable to most human activity, operations management is especially concerned with the creation and delivery of products and services.

When studying operations, it is helpful to adopt three different yet complementary views of operations. The resource view focuses on the assets used in the operation while the process view highlights the operation's activities used in transforming inputs to outputs. The financial analogy is that the resource view focuses on the balance sheet while the process view shows how assets are used in the generation of income. The third view characterizes the competencies of the operation, that is, what it can and cannot do well. We will explain these views in greater detail soon but this suffices to define our topic of interest.

Strategically, operations management involves the long-term planning and structuring of work. Indeed, the task of operations strategy is to design the *operating system*, which is the joint configuration of resources and processes, such that its resulting competencies are aligned with the organization's desired competitive position. In other words, operations strategy focuses on how to best enable and implement the organization's strategy. (For for-profit organizations, 'best' can be measured as maximizing the net present value of profits. For not-for-profits, it could mean minimizing cost subject to strategically specified constraints on quality, time, flexibility and other non-financial metrics.) Tactically, operations management involves the near-term planning and coordination of work. Its task is to utilize the operating system and provide the best match of supply with demand. According to Cachon and Terwiesch (2006), organizations that take the design of their operations seriously and better match supply with demand will gain a significant competitive advantage over their rivals.

In the remainder I will describe the typical operational decisions involved in designing an operations system and a framework to guide operational decision-making.

The Resource View of Operations and Resource Decisions

To coordinate and perform their activities, organizations need a wide variety of resources, which are the means or the real assets needed to perform the activities. The *resource view* considers any organization (or any of its parts) as a bundle of real assets.

Resources or real assets are divided into two groups: tangible and intangible. Tangible real assets are human resources (people) and capital assets (property, plant and equipment as shown on the balance sheet). Intangible assets include relationships with suppliers or customers, intellectual property, reputation and brands, and knowledge and experience in processing, technologies and markets. Often, tangible real assets *do* the work, while intangible assets embody the *know-how* to do the work.

Viewing operations as a bundle of real assets is most useful when deciding on the amounts and types of resources needed by the operation. This investment or capital budgeting decision, along with the allocation of resources to activities, is undoubtedly a major task of management.

To configure its resource portfolio, the organization must make (at least) four key decisions:

1. Capacity sizing is deciding on how many resources to invest in for each resource type. The resource type with the lowest resource capacity is the bottleneck and determines the capacity of the entire operations system. Strategically, capacity sizing involves investment in processing resources: capital and labour. Tactically, one adds buffers and must size their desired inventory to accommodate scale economies (e.g., for batch processing or quantity discounts) and buffer processing resources against supply or demand variability and uncertainty.
2. Capacity timing is deciding on when to increase or reduce resources. It specifies the availability of capacity and the timing of capacity adjustments, both expansions and contractions.
3. Capacity-type decisions characterize the type or nature of each resource. For example, is it a human (labour) or capital resource? To what extent can a capital resource operate unsupervised; that is, what is the level of automation? What is the range of tasks that it can handle, from single-task (specialized) to multi-task (flexible)?
4. Capacity location decisions specify where resources should be located. Capacity location deals with finding appropriate geographical sites and assigning roles to them. Indeed, location decisions are part of network strategy. Network strategy also includes topology or configuring connections between locations. For example, many airlines use a hub-and-spoke or star topology for aeroplane routing, while most automotive companies use a tiered supply network or tree topology. Interconnections also specify the logistics (transportation) arrangements.

The Process View of Operations and Process Decisions

The purpose of resources is to work and generate value. The *process view* shows how the resource portfolio is utilized and allocated to activities with the intent of adding value. Flow charts and value stream maps are graphical representations of the process view of an organization.

Processes are structured, recurrent activities that transform inputs into outputs. Some processes are well defined and documented, while others are less so and are called routines. A process is a network of activities with specific precedence relationships among the activities – the relationships that specify which activities must be finished before another activity can begin. The terms process and routines embody an element of repetition but focus on the positive aspects: practice makes perfect, and recurrent execution makes analysing and improving operations a worthwhile investment.

The process view considers an organization (or any of its parts) to be an activity network or a collection of processes. A process can refer to detailed workflow, such as billing a customer or implementing an engineering change order, or to aggregate activities such as new product development or customer service. Adopting a process view means that we visualize instances of work, called flow units (e.g., consulting engagements, patients or orders), flowing through a network of activities and buffers. Buffers store flow units that have finished one activity but are waiting for the next activity to start (Anupindi et al. 2012). This primary workflow is typically accompanied by an information flow (to coordinate the activities) and a cash flow (to support and reward them).

By necessarily starting with inputs (expressed customer demands) and ending with outputs (served customer demands), the process view is compatible with a customer-centric view of the world. Value stream mapping emphasizes this customer-centric view and defines value from the perspective of the customer: a value-added activity is an activity that benefits the customer. The process view is a horizontal view of the organization that cuts through functional silos such as finance, accounting, production, marketing and sales. It emphasizes crucial interfunctional relationships among internal parties, as well as the interfaces and relationships with external customers and suppliers.

By equating organizations with processes, the business process re-engineering paradigm of the

early 1990s has put operations on the agenda of top management at many organizations. By capturing both structure (or architecture or design) and execution, the process view is useful for analysing the division and specialization of work following the dictum of Adam Smith, as well as for coordinating and evaluating execution. For example, how is the auto manufacturing process divided and coordinated between the original equipment manufacturer (OEM) and its suppliers? Given a process structure, what is the total marginal cost of the car manufacturing process from inputs to a finished vehicle? How long is an average consulting engagement from start to completion?

The process and resource views are complementary: the process view focuses on how work is done, while the resource view focuses on who or what performs the work. Both views are necessary to have a good understanding of operations: viewing the firm as a sequence of activities without considering its resources gives as incomplete a picture as viewing the firm as a collection of resources without considering how those resources are put to use.

To configure its processes, the organization must make (at least) four key decisions:

1. Supply or sourcing decisions specify which activities are performed internally, which are outsourced, and how to manage suppliers. They define the process boundaries or interfaces and relationships with suppliers. This includes strategic sourcing decisions such as outsourcing (which activities are provided by third parties?), vertical integration (how far do we extend our activities upstream and downstream?), and supply network configuration (how many suppliers do we use and have relationships with?).
2. Technology decisions characterize how to process inputs to outputs. It includes the methods and systems employed, as well as the know-how and intellectual property. This 'bucket' of technology decisions is arguably the biggest as it could capture most of operations management. For example, there are four key types of technology:
   (a) Coordination and information technology determines how we coordinate, communicate and plan execution throughout the activity network. Coordination is a typical managerial activity and includes the assignment of responsibility, incentives, measurement and control. For example: do we have tightly centralized or distributed control? Coordination is obviously important during planning. For instance, managers often fail to coordinate financial forecasts, sales forecasts, marketing forecasts and operations forecasts. Collaborative planning and forecasting systems aim to correct this mistake. Coordination is equally important during execution: much of the challenge in managing operations is making events happen at the right times. Finally, coordination depends strongly on information technology such as communication technology (e.g., the Internet, radio frequency identification (RFID)) and planning systems (e.g., enterprise resource planning (ERP)).
   (b) Product technology describes the design philosophy, product architecture and product capabilities (often as perceived by the customer). Is the product designed in modules or as a single integral system? To what extent does the design take into account manufacturability, testability, or reusability?
   (c) Process technology describes the structure of the conversion process and methods used in its execution. Network structure describes the layout of the activity network in terms of locations of activities, buffers and interconnections. For example, processes can be organized by activity or by product line. Job shops such as consulting companies and tool-and-die shops often have a functional or process layout, whereas flow shops such as car assembly plants and chemical processing plants usually have a product layout. Networks strategy also specifies whether processes should be standardized or localized.
   (d) Transportation technology describes how goods are exchanged among different

activities in the network. It is a key driver in logistics and supply chain management, but can also describe how insurance policies are moved between the different processing steps.

3. Demand decisions specify how to match demand to available supply. They characterize the interfaces and relationships with customers and include demand planning and forecasting as well as tactical capacity allocation and order management. Demand management is an important driver in inflexible supply processes that cannot quickly adapt to changes in demand, such as the core processes in airlines, hotels and car rental companies. It also relates to service and customer relationship management (CRM), which are the processes involving any interaction with customers.
4. Improvement and innovation decisions characterize the processes and incentives to improve and innovate products and processes. They involve not only research and development activities, but also broader continuous improvement and learning throughout the organization.

The Competency View of Operations and Competency Decisions

The specific choice of resources and processes affects what the operations system can and cannot do well. This operational system, together with the vaguer, but at least as important, concept of values, characterizes the competencies of the organization.

Besides resources and processes, values are the third factor that affects what an operation – and thus an organization – can and cannot do. Christensen and Overdorf (2000) define values as the standards by which employees set priorities. Certainly some priorities are embodied or programmed into a process but many are not, even though prioritization decisions are made by employees at every level. Examples include judging whether an order or customer is attractive or not, whether a suggestion to improve a product or process is attractive or marginal, and whether an investment is worth making or not.

As organizations become more complex, consistent values are powerful mechanisms for employees to make independent but consistent decisions about priorities. As successful companies mature, employees often start believing that the processes and priorities they have often used so successfully are the right way to do their work. Once that happens and employees begin to follow processes and decide upon priorities by assumption rather than by conscious choice, those processes and values come to constitute the organization's culture.

The competency view characterizes the abilities of the ensemble of the organization's resources, processes and values. Competencies determine the set of outputs, products and services that the operation will be particularly good at providing. They can be measured along multiple dimensions, including:

1. Cost: the marginal and total cost of operating, including variable and fixed costs, are particularly important in competitive markets such as commodities and low-margin businesses. The relevant cost metric depends on the decision and the setting and can be tracked through cost accounting systems (be careful to understand depreciation and allocation schemes) or may need careful measurement or estimation. All activities bear on cost, but this competency most naturally reflects scale economies (capacity sizing) and complexity costs (capacity types).
2. Time: the total flow, response and lead time characterize the time needed to transform inputs into outputs, to fill a customer order, and to receive inputs, respectively. Flow time and lead time determine working capital requirements and forecasting accuracy. Responsiveness is important in service and convenience-driven businesses, as well as in rapidly changing environments.
3. Quality refers to the degree of excellence of the process, product or service. It has design-related dimensions such as performance and features, as well as process-related dimensions such as durability and reliability. Quality is a key differentiator in luxury and high-precision

businesses and a required competency in mature industries.

4. Flexibility measures the ability to change inputs, activities, volumes or outputs. Similar to quality, flexibility has several dimensions such as scope flexibility (the selection or range of products and services offered, including the level of customization), volume flexibility and robustness. It is also a key risk mitigation driver.

Depending on the interest of study, one can add innovation as a separate competency or as 'mega' flexibility – the ability of the operation to change, improve and innovate.

The resource, process and competency views provide a 360-degree perspective on operations. The competency view is the most 'outward-looking' and begs the important question: *which* competencies should an operation have, nurture or develop? This naturally connects to competitive strategy, which directly inspires our framework.

Putting It All Together: A Framework for Operations Strategy

In principle, operations strategy could emerge from a giant optimization programme that automatically identifies the resources, processes and competencies that maximize the net present value of the organization. However, it is not entirely clear how to measure the value of a not-for-profit organization. In addition, this quantitative approach cannot yet (and likely never will) formulate comprehensive strategies: the search space of all possible resource, process and competency configurations cannot easily be represented mathematically, let alone be summarized into one financial measure that can be optimized.

Operations strategy therefore starts with qualitative arguments to characterize the appropriate types of resources, processes and competencies. Subsequently, if more specificity is needed or desired, value maximization can be used to optimize over that restricted search set.

A key qualitative argument is provided by the principle of alignment or strategic fit, which is at the foundation of our operations strategy framework. The term operations strategy implies that it relates to competitive strategy and to operations. But what precisely should this relationship be? One of the oldest ideas in the strategy literature is that the appropriateness of a strategy can be defined in terms of the fit, match or alignment of organizational structure and resources with the environmental opportunities and threats (Chandler 1962; Andrews 1971). This idea is sufficiently important to be called

> Principle (Alignment): Operations strategy should develop resources and configure processes such that the resulting competencies are aligned with the competitive position that a firm seeks over time. (Van Mieghem 2008: 18)

The existence of trade-offs and constraints in the operations system implies that no single operation can be universally appropriate; rather, each organizational strategy requires a *tailored operating system*: its resources and processes are configured such that its competencies best fit the customer value proposition specified by the competitive strategy. The necessity of making choices in strategy is reflected in making choices in operational competencies. This is beautifully captured by a sign displayed at a restaurant in Puerto Morelos, Mexico:

> We do three types of jobs here: GOOD, FAST and CHEAP. You may choose any two!
> If it is good and cheap, it will not be fast.
> If it is good and fast, it will not be cheap.
> If it is fast and cheap, it will not be good.

The principle of alignment extends to the entire organization. McKinsey consultants Drew et al. (2004) argue that the operating system must be aligned with what they call the management infrastructure (meaning organization, leadership and performance systems) and the mindsets and behaviours (meaning values) of the organization. You may think of the operating system as the engine of a car: as high-powered as it may be, it won't go in the right direction without the appropriate dashboard information systems and a willing driver.

The principle of strategic fit directly inspires a three-step framework for formulating operations strategy:

1. How does the organization seek to compete and provide value to its customers? For each targeted customer segment, how is the customer value proposition prioritized around price, time, quality and variety (or choice)?
2. What must operations do particularly well? For each targeted customer segment, how are the operations' competencies prioritized around cost, flow time, quality and flexibility?
3. Which resources and processes best provide that competency prioritization? For each targeted customer segment, how are the asset portfolio (sizing, timing and location of each resource type) and the activity network (supply, technology, demand and innovation management) configured?

The sequence in which these questions are answered reveals a different perspective on operations strategy.

The market perspective first decides on competitive strategy and then specifies the competencies that operations strategy must develop by selecting and configuring the appropriate resources and processes. Behind this perspective is the premise that 'structure follows strategy' (Chandler 1962). This top-down and outside-in perspective ensures that operations and all parts of the organizations reflect the intended market position, and tends to create a customer-driven organization.

The resource and process perspective approaches the framework in the reverse sequence. This bottom-up and inside-out perspective starts from the premise that the building blocks of strategy are not products and markets, but processes and resources. This perspective ensures that the value proposition offered to customers can be well executed with the given operations. It tends to create a resource-driven organization.

As environments, strategy and operations evolve, organizations must seek to maintain alignment by adopting both perspectives over time. In order to satisfy a new customer need, the firm may need to build new competencies, resources and processes. Those processes and resources may later be used to invent new products and services that may drive, if not create, new markets. Iterating through both perspectives ensures a continual fit between internal competencies and external demands and competitive situations. Consequently, 'dynamic alignment' requires a continual process of adaption to ensure that operations and competitive strategy remain aligned over time.

See Also

- ▶ Firm Resources
- ▶ Make-or-Buy Decisions: Applications to Strategy Research
- ▶ Process-Oriented Strategic Theory

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Operations Research

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Definition Operations Research (OR) is the discipline of applying advanced analytical methods to help make better decisions, which may concern strategic issues for an organization.

It may be surprising that an entry named *Operations Research* (OR) appears in an encyclopedia of *strategic* management. In discussing whether OR does address strategy, Kirkwood (1990) argued that it should and does. OR is the discipline of applying advanced analytical methods to help make better decisions, which may concern strategic issues for an organization. By using analytical methods to analyse complex situations, OR gives executives the power to make more effective decisions based on more complete data, consideration of all available options, careful predictions of outcomes and estimates of risk, and the latest decision tools and techniques.

Every organization faces issues and decisions that are of strategic importance. Pidd (2004) comments that strategic decisions are often complex, involving many different interacting factors that have to be dealt with by individuals who may each see things differently.

OR can make an important contribution to strategy support (see O'Brien and Dyson 2007). There are opportunities for OR in such a role because of the complex nature of strategic decisions and owing to the many different activities within the strategy development process. Some aspects of the process can be supported through the processes of group facilitation and negotiation, while others can be supported through the use of expert analysis that can be fed into the strategy process. Ormerod (2006: 118) notes that the opportunities for OR in supporting strategy are 'multiple and varied' and may involve 'help with analysis or help with the process or both'. Dyson (1990) advocates supporting the strategy process through the use of both OR and tools from other fields (see also Dyson 2000). Such a tool may be either quantitative or qualitative, manual or computerized, based on OR methods or methods from another discipline, or based on one or several methods (Stenfors et al. 2007: 931). Three pertinent tools, in particular, have been developed by Operations Researchers: decision analysis, first defined by Howard (1966) (see also Keeney 1996), strategic choice approach (Friend and Hickling 2005) and the decision explorer® software (Ackermann and Eden 2011).

Bell (1998) argues that major OR studies, which have led to sustainable competitive advantage over a significant period of time, are seen as a strategic asset to those organizations, and therefore they can be reasonably labelled as strategic OR. Examples he provides include airline crew scheduling, optimal dynamic pricing (yield management), optimal telemarketing centres and corporate strategy.

Public sector policy analysis may also be considered as strategy management, as issues such as public health planning, energy supply and planning, policy analysis for the prison service, privatization of a public enterprise, understanding social reforms, and modelling the impact of financial decisions for a government department are considered. OR has contributed to the analysis of such policies (see Rosenhead 1992, Thissen and Walker 2012).

It is argued (Dyson 2000) that performance measurement is closely linked both to strategy and OR. Poister (2003: 10) lists ten management functions which performance measurement systems are used to support, the second of which is ▶ strategic planning (see also Pidd 2012).

See Also

- ▶ Decision-Making
- ▶ Linear Programming
- ▶ Quantitative and Qualitative Methods in Organizational Research
- ▶ Risk and Uncertainty
- ▶ Simulation Modelling and Business Strategy Research
- ▶ Strategic Decision-Making
- ▶ Strategic Objectives
- ▶ Strategic Planning
- ▶ Strategic Risk Management

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Opportunism

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Abstract

Opportunism is self-interest-seeking with guile and is a troublesome source of behavioural uncertainty (e.g. economic hold-up, ▶ adverse selection and ▶ moral hazard problems). An important lesson for the purpose of studying economic organization is that transactions, which are subject to *ex post* opportunism, will benefit if appropriate economic safeguards can be derived *ex ante*. Mutual sunk cost credible commitments facilitate ongoing relationships and adaptation. The upshot is that the study of (corporate) governance is concerned with the mitigation of all forms of contractual opportunism.

Definition Opportunism is self-interest-seeking with guile. More blatant forms of opportunism include cheating, lying and stealing. Opportunism more often involves subtle forms of deceit, such as economic hold-up problems, adverse selection and moral hazard. More generally, opportunism refers to the incomplete or distorted disclosure of information, especially to calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse.

> [T]he world should not be organized to the advantage of the opportunistic against those who are more inclined to keep their promises. I would simply say that introspection supports this view. And all of Shakespeare's tragedies and comedies support it. (Williamson 1990: 126)

Herbert Simon concluded his 1984 address to the American Political Science Association with the following observation: 'Nothing is more fundamental in setting our research agenda and informing our research methods than our view of the nature of the human beings whose behavior we are studying' (Simon 1985: 303). Along these lines, ▶ transaction cost economics maintains that a more complete theory of firms and markets – begun by Coase (1937) – is achieved through more self-conscious attention to the consequences of the elementary attributes of human decision-makers, of which bounded rationality (Simon 1947) is one and *opportunism* (Williamson 1993) is another.

Opportunism is 'self-interest seeking with guile' (Williamson 1975), and is a troublesome source of behavioural uncertainty in economic transactions. As Diamond noted: 'economic models . . . [posit] individuals as playing a game with fixed rules, which they obey. They do not

buy more than they know they can pay for, they do not embezzle funds, they do not rob banks' (Diamond 1971: 31). While such behaviours are disallowed under conventional microeconomics assumptions, opportunism, in a variety of forms, plays a central role in the analysis of markets and hierarchies.

More blatant forms of opportunism include cheating, lying and stealing. Opportunism more often involves subtle forms of deceit. For example, economic hold-up problems (Klein et al. 1978), *ex ante* opportunism of ▶ adverse selection (Akerlof 1970) and *ex post* opportunism of ▶ moral hazard (Arrow 1971) are well recognized in the strategic management and organizational economics research literatures. More generally, opportunism refers to 'the incomplete or distorted disclosure of information, especially to calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse. It is responsible for real or contrived conditions of information asymmetry, which vastly complicate problems of economic organization. Both principals and third parties (arbitrators, courts, and the like) confront much difficult *ex post* inference problems as a consequence' (Williamson 1985: 47–48).

Williamson (1985) finds it noteworthy that Niccolò Machiavelli's efforts to 'deal with men as they are' (Gauss 1952) makes prominent provision for opportunism. Indeed, the prince is advised by Machiavelli to behave with reciprocal or pre-emptive opportunism. However, Williamson finds that such counsel is a 'very primitive response' (Williamson 1985) and is based on a 'myopic logic' (Williamson 1996). Williamson (1985) submits that the more important lesson for the purpose of studying economic organization is that transactions, which are subject to *ex post* opportunism, will benefit if appropriate economic safeguards can be derived *ex ante*. Rather than reply to opportunism in kind or to 'get them before they get you', the prince is better advised to give or receive mutual economic 'hostages' (Schelling 1960) or mutual sunk cost 'credible commitments' (Williamson 1983), which facilitate ongoing relationships and adaptation. To illustrate this logic, Mahoney (2005) shows in game-theoretic terms that mutual credible commitments can transform a Prisoner's Dilemma game (Flood 1958) into an Invisible Hand game (Miller 1992), to achieve a private ordering via a self-enforcing agreement (Klein and Leffler 1981).

The upshot is that the study of (corporate) governance is concerned with the mitigation of all forms of contractual opportunism. Transaction costs theory recommends that transactions be organized so as to economize on bounded rationality while simultaneously safeguarding these transactions against the contractual hazards of opportunism.

There has been some debate concerning opportunism. For example, Conner and Prahalad (1996) suggested that the Strategic Management field move towards a theory of the firm that posited no opportunism. However, such an assumption, while simplifying matters greatly, comes at an obvious loss of realism with uncertain gains in predictive power. In this regard, Williamson (1999: 1099) submitted that to assume an absence of opportunism would miss much of the action, and states that 'To deny or suppress opportunism in the study of economic organization is tantamount to staging Hamlet without the Prince of Denmark – which, however, is not to say that such a play/theory of organization cannot be staged. [Team theory (Marschak and Radner 1972) is illustrative.]'

Conner (1991) suggests that routines and culture would develop within the firm in ways superior to market contracts *in the absence of opportunism*. Mahoney (2001), however, proposes an alternative view in which routines and culture develop within the firm in ways superior to market contracts *precisely because opportunism exists*. In the absence of opportunism, recurrent marketing contracting could achieve the efficiency of internal organization within the firm. It is in the presence of opportunism that differences arise. Consider, for example, common language or coding (Arrow 1974). In this regard, Williamson (1975: 25) writes:

> A further advantage of internal organization is that, as compared to recurrent market exchange, efficient codes are more apt to evolve and be employed with confidence by the parties. Such coding also

economizes on bounded rationality. Complex events are summarized in an informal way by using what might be called idiosyncratic language. Although, in principle, the parties to recurrent market contracts could devise the same language, thereby realizing the same economies, such exchanges are subject to risks of opportunism – hence, are less apt to be fully developed.

A substantial advantage of the firm is that coding within the firm increases communication efficiencies and provides stability in operations. The standardization of language can be seen in accounting systems, blueprints, and other reporting systems (Nelson and Winter 1982). The superior coding and the superior knowledge transfer that takes place within the firm relative to market contracts is posited to be the direct result of superior attenuation of opportunism relative to recurrent contracting (Foss 1996; Williamson 1975).

Further, the firm may more effectively achieve knowledge transfer since pre-emptive claims on profits between separate firms are eliminated. The firm has better control of opportunism because of the authority relationship within the firm (Barnard 1938; Simon 1947; Williamson 1975).

Managers within the firm can be required to cooperate in an adaptive manner and promotions can be adjusted to achieve such behaviour. Also, disputes may be settled more effectively internally rather than through litigation (Masten 1988). The auditing powers of the firm are superior to the auditing capabilities of contracting parties. For example, a firm has the right to audit its divisions but no right to audit outside contractors. The integrated firm has superior information upon which they can base their resource allocation decisions. Equity and due process may develop within the firm. Selection, training and socialization may minimize the divergence of preferences of team members (Ouchi 1980). In summary, undertaking a comparative institutional assessment leads to the insight that when recurrent contracting is replaced by the firm the following changes occur to help mitigate opportunism: ownership changes, incentives change, and governance structures (e.g., the ability to monitor and reward) change (Mahoney 1992; Williamson 1985).

See Also

- ▶ Adverse Selection
- ▶ Moral Hazard
- ▶ Transaction Cost Economics

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Opportunity Recognition

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Abstract

In the traditional microeconomic approach, agents are fully informed, opportunities are already known and a situation of equilibrium is assumed in the first place. This setting, however, posits what needs to be explained: the process by which opportunities are recognized and dispersed information is marshalled. Some economists, such as Israel Kirzner, as well as the current research in management and organization, have realized the theoretical importance of opportunity recognition for understanding the market process. In these approaches, opportunities, which may or may not be stipulated to exist objectively, can be discovered, created or imagined.

Definition Opportunity recognition is a theory explaining how individuals, and by extension business firms and organizations come to identify new opportunities that were hitherto unknown to them. Based on prior knowledge, past experiences and current market conditions, some individuals may recognize potentially profitable new business ventures.

Equilibrium and the World of Already-Recognized Opportunities

In the traditional microeconomic approach, agents are fully informed and know not only the alternatives available to them but also which action would maximize their utility within the constraints they face. In this view of the world, agents have no reason to remain outside the optimum situation, and therefore always converge, within a single instant, to the point of most satisfaction. As Lionel Robbins described in *An Essay on the Nature and Significance of Economic Science* (1935), economics is fundamentally a problem of constrained optimization. There is no hesitation, ignorance or uncertainty. *Homo economicus* always computes the right solution. Opportunities for action are already recognized and known. While somewhat unrealistic, this approach offers important insights into human behaviour, especially the idea that individuals do not act at random but are driven by their own preferences within existing constraints. This view helps determine the existence of equilibrium and is based on the idea that every individual will always act in order to reach the most satisfying situation possible.

If the sacrifice of realism did not imply any sacrifice in the theory's explanatory power, the traditional approach would be enough to explain actual behaviour in the real world. It suffers, however, from various limitations. As Friedrich Hayek pointed out in 'The use of knowledge in society' (1945), the theory assumes what needs to

be explained, that is, it posits the existence of the knowledge necessary for equilibrium to be effected. Indeed, if the economic problem is a problem of coordination of individual plans, there is no reason to assume from the outset that the knowledge necessary for that coordination to occur is readily available at all times. Instead, the theorist must show how the relevant knowledge is discovered, marshalled and used to that end. In *Information and Investment* (1960: 12) George B. Richardson remarked in a similar way that 'presumably it is the existence of a considerable measure of order and stability in the real economic world around us that engenders faith that equilibrium can in fact be realized'. In other words, it is mistaken to assume that equilibrium (i.e., a situation of consistent, correct and coordinated plans) is more than just a foil against which one can explain change. Rather, one should posit that the world is not made of fully informed individuals whose expectations are mutually compatible from the start.

Markets, Overlooked Opportunities and Identification

Indeed, assuming fully informed agents (even in a stochastic manner) lead us to overlook a crucial dimension of market theory: it does not explain the *process* by which equilibrium may occur, but rather assumes it to exist in the first place. It doesn't show the way the market works, but simply how the end point comes to be defined. Instead, Hayek insisted, the theory must explain how plan coordination occurs in a world in which knowledge is dispersed, that is, it must explain the process by which coordination takes place. Israel Kirzner (1973), among others, took on the task of elaborating a theory of the market that would explain the process by which knowledge is marshalled and used. If one starts from a situation of truly dispersed knowledge, then individuals are in a situation in which they don't know what it is that they don't know. There is genuine ignorance in the universe and individuals may find themselves in a world full of truly unknown opportunities (in addition to those already recognized). In other words, individuals may have, within their grasp, opportunities for bettering their situation that they have entirely overlooked. In such a world, opportunity recognition becomes a crucial step in the market process, for it is only once opportunities have been recognized that they can be fully exploited.

While mainstream economics has not yet manifested much interest for entrepreneurship, other related disciplines have investigated the entrepreneurial process more thoroughly. The field of entrepreneurship studies can be divided into occupational, structural and functional approaches to entrepreneurship. The occupational approach studies start-ups and the factors affecting the exploitation of entrepreneurial opportunities, such as the fundamental psychological attributes of the entrepreneurial profile. The structural view focuses on the firm or the industry. The line of research in economics focuses instead on the functional approach, that is, the function of entrepreneurship in market theory. For Kirzner, entrepreneurship consists primarily in noticing a new means-ends framework that was hitherto not part of the agent's optimization set. Kirzner sees opportunity recognition as the defining moment of the entrepreneurial market process. It is the prerogative of the entrepreneurial function to discover hitherto overlooked opportunities. In this undeterministic serendipitous process, opportunities can remain unnoticed depending on how alert entrepreneurs are to them. Alertness, while a human capacity, is not something that can be deployed at will in order to discover opportunities. It is the result of one's own history, prior knowledge and other capabilities. To a large extent it lies outside the purview of one's own control.

Building on Kirzner's work, the notion of opportunity recognition became one of the focuses of attention of the literature in management and organization theory. Opportunity identification, or what Scott Shane (2003) calls the individual-opportunity nexus, involves primarily the study of the way entrepreneurs come to recognize opportunities, evaluate them and exploit them (Eckhardt and Shane 2003). Shane and Venkataraman (2000: 220) define opportunities

as 'those situations in which new goods, services, raw materials, and organizing methods can be introduced and sold at greater than their cost of production'.

Knowledge is heterogeneous and dispersed, and individuals interpret the world differently (the perception of information is subjective). These two tenets, combined with idiosyncratic life experiences mean that some entrepreneurs will know about particular market characteristics or will see the importance of some services to customers when others will not. Moreover, an entrepreneur's ability to recognize opportunities may also depend on various factors such as perception, cognitive abilities, capacity for bisociative thinking (Ko and Butler 2006), the potential net gain that results from disequilibrium, the networks entrepreneurs belong to (Arenius and De Clercq 2005; Ma et al. 2011) and prior knowledge. Differences in these factors lead individuals to see different opportunities in similar socio-economic circumstances. These factors act as catalysts, so to speak, in the recognition process. Take prior knowledge as an example. Accumulating prior knowledge appears to help entrepreneurs think in a more intuitive way; and prior knowledge is possibly related to higher alertness (Arentz et al. forthcoming). As Shepherd and DeTienne (2005) explain, individuals with prior knowledge have an increased ability to recognize important connections between concepts, which may improve their ability to recognize opportunities.

Current Developments in Opportunity Recognition Theory

All this leads to the categorization of opportunity recognition. The literature in management and organization theory seeks to operationalize theoretical concepts that were developed in order to understand market process theory (Klein 2008). Where Joseph Schumpeter (2006), Ludwig von Mises (1966) and Israel Kirzner only looked at the entrepreneurial function as a market category, current research looks at how opportunities are recognized in practice. Some strategic management theorists argue that opportunity recognition is the result of rule-following behaviour, as firms establish heuristics centred on opportunity capture (Bingham and Eisenhardt 2011). Others link opportunity recognition to the dynamic capabilities that enable businesses to create intangible assets supporting superior performance (Teece 2007). Sharon Alvarez and Jay Barney (2007) state that opportunities recognition can be modelled either as discovered or created. In the first case, entrepreneurship is akin to a responsive agency reacting to an exogenous change (which is apparently similar to the way Kirzner had originally modelled it in 1973). In the creation case, entrepreneurial action is more endogenous. Others, such as Peter Klein (2008) and Nicolai Foss, see opportunities as neither discovered nor created but as imagined (Foss et al. 2008). The opportunity and its associated profit and loss do not exist until entrepreneurial action is complete. In other words, the discovery approach seems to consider opportunities as existing objectively (even though entrepreneurs subjectively perceive them), while the creation, and especially the imagination, views consider opportunities as objectively non-existent until they are fully realized.

The creation and imagination views reinforce the idea that entrepreneurship is about ▶ innovation and creation *ex nihilo*. They bring, however, their own set of problems into the balance. For instance, if opportunities have no existence in the outside world, then what determines success or failure in entrepreneurial activity? If anything can be successfully imagined, can entrepreneurs ever make losses? The need for an external measure against which success can be judged does not seem to have been adequately addressed in this literature. The discovery view also has its own limitations. Those who criticize it say that considering entrepreneurs as just responsive to what is objectively in existence is theoretically insufficient in a world of true Knightian uncertainty. Surely, they say, there is more than just passive action on the part of entrepreneurs.

Indeed, the notion of opportunity discovery may mislead the reader into thinking that the

role of the entrepreneur is merely to see or to recognize what is already present in the economy. In other words, the entrepreneur in this view may not be seen as a Schumpeterian innovator who unleashes his own imagination to create something entirely new, but simply as someone who recognizes, almost passively, what's already there. According to Kirzner, however, the notion of opportunity discovery simply implies that one's own creativity and imagination cannot be unleashed unless one has come to recognize a space in which creativity and imagination can be exercised. Imagining and creating can only take place once one has become aware that they can be exercised. One cannot build a new plant until one has become aware of the idea.

Hence, opportunity discovery should not be regarded as a passive action. Rather, it reflects the human propensity to discover what is possible to create within the current state of the world and with regard to what one can imagine for the future. Opportunity discovery takes place within the possible and the actual (i.e., the current reality of the world) and, at the same time, lets human imagination (considering the present state of the world) create the future. This is especially crucial in the context of market transactions where human creativity is bound by factor prices on the one hand and by individual preferences on the other. Within these boundaries, entrepreneurial imagination can roam free. The recognition or discovery of an opportunity is always a necessary step, even when entrepreneurial activity is highly innovative.

In conclusion, one may wonder what is left of economics as Robbins saw it once opportunity recognition is taken into account. Individuals are not pure optimizers; they are also entrepreneurs (i.e., opportunity discoverers). Every action takes place in a world of uncertainty and therefore contains speculative elements of entrepreneurial behaviour. Whenever possible, individuals may adopt a more optimizing mode of conduct (e.g., Herbert Simon's bounded rationality or Hayek's rule-following behaviour), if this is enough to deal with their environment. But to assume an open-ended universe in which new opportunities can be recognized enriches our understanding of the social order and provides a more robust theory of the market system, including the role business firms and organizations play in it.

See Also

- ▶ Arbitrage and Its Limits
- ▶ Austrian Economics
- ▶ Innovation

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Organic Growth

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Abstract

Among the different approaches to firm growth, organic growth is most often contrasted with acquisitive growth. The belief is widespread that organic growth creates real value, where acquisitive growth only positively impacts on short-term financial figures. The central idea of leveraging existing resources to create new value is often ignored in this belief. Acquiring new resources is often essential to leveraging the value of existing resources and to creating new opportunities for firm growth.

Definition Organic growth is the expansion of a firm's operations based solely or at least primarily on its internally generated resources.

Firm Growth and Value Creation

Firm growth is a central concern of managers. Increasing or at least maintaining the firm's current rate of growth is the central objective of managers' attempts to formulate competitive and ▶ corporate strategy to guide the future development of their firms. The level of a firm's growth is widely acknowledged to be a key measure of the capability of its managers – the capability of its managers to create value from a given stock of resources.

A firm's growth rate can be measured in a number of different ways. Research in strategic management has generally focused on absolute sales growth or relative employment growth (McKelvie and Wiklund 2010). Some studies have used market share, assets and profits as measures of firm growth. When focusing on attempting to measure value creation, firm profits are clearly among the better single measures of firm growth. The rate of growth in corporate profits (RGCP) is highly correlated with the total shareholder value (TSV). According to one empirical study, variation in RGCP explains two-thirds to three-fourths of the variation in TSV over time (Zook and Allen 2000).

How can managers increase a firm's rate of earnings growth? There are at least five different approaches to firm growth available to managers (1) organic growth, (2) growth by acquisition, (3) a combination of organic and acquisitive growth, (4) earnings management through accounting elections and changes in accounting methods within GAAP accounting rules, and (5) downright earnings manipulation to artificially create desired earnings results. The financial scandals of WorldCom, Enron and many other firms since the year 2000 in particular has heightened investor awareness of apparently widespread use of approaches (4) and (5) to increase a firm's reported growth rate in earnings. These approaches, however, do not increase value for shareholders – or any other stakeholder group related to the firm other than the managers themselves, who generally receive compensation in some form for meeting or exceeding earnings growth targets.

Furthermore, since the mid-1990s, the observation, based on a vast body of research, that Mergers and Acquisitions (M&A), on average, tend to destroy rather than create value has

become widespread throughout the investment community (King et al. 2004). Thus, firm growth through acquisition also, on average, does not create sustainable value for shareholders – or, once again, any other stakeholder groups other than the managers themselves.

Organic Growth

The combination of these observations has led to a dramatic increase in management interest in organic growth, that is, expansion of a firm's operations based solely or at least primarily on its internally generated resources. This interest is based on the strong possibility that the only approach to real value creation that management has is organic growth, as historical experience has eliminated the growth by acquisition and earnings management and manipulation approaches as more likely to be value destroying than value creating. Indeed, the author increasingly hears unsubstantiated stories of boardroom discussions that highlight directors' strong advocacy of the pursuit of organic growth and deliberate eschewing of acquisition and earnings management alternatives.

In spite of dramatically increased interest, it is far from clear to date that many very large firms have been able to find and exploit significant opportunities for organic growth. One study, using data from 1999 to 2004 to calculate the annual growth rates of US and foreign firms with capitalizations of over $1 billion, found that of the 583 US firms that had an average growth rate of 5% per year, only 35, or 6%, achieved it primarily through organic growth; and of the 348 foreign firms, only 24, or 6.9%, achieved it through primarily organic growth. The overwhelming majority of the firms with an average of 5% growth achieved that level through acquisitions (McGrath 2006). This study, of course, was of very large firms. One would expect to find that a much larger portion of small and medium-sized companies have achieved growth rates in excess of 5% per year over 3–5 years organically (the author was not able to find an empirical study documenting this hypothesis).

The Dynamics of Organic Growth

A small firm achieves a high rate of growth in earnings when its products/services are in the growth phase of the product lifecycle, and when it develops the assets and competencies needed to deliver these products/services to a rapidly expanding number of customers. Many small firms in such circumstances achieve growth rates far in excess of the 5% per year discussed above for even longer time periods. As the market for such a firm's products/services begins to mature – that is, become more saturated – the firm's growth rate in earnings obviously decreases. In addition, its growth rate in profits typically decreases even more as a result of greater competition from the increasing number of new entrants into the market that takes place over time.

In an effort to sustain high growth rates in earnings, managers of firms experiencing such declining growth rates can broaden the geographic market scope of their firms in search of new growth potential. A typical pattern of such expansion of geographic market scope for a US firm would be to expand from the local area around where the firm started to the region encompassing the local market, and then to the national US market. Many firms will find additional opportunity for growth in international markets, and some will even be able to pursue growth opportunities on a truly global scale. Firms expanding into new geographic markets typically need to build or acquire location-specific assets, such as a consumer bank needing local branches to attract deposits and make and service loans.

A second strategic response to declining rates of growth in earnings is to reshape current products/services to the needs of new customer segments, domestically and/or internationally. Such reshaping typically does not require the creation or acquisition of substantial new technology or production or resources, but may require new distribution assets.

A third alternative in attempting to sustain high growth rates in earnings is for managers to expand the product scope of the firm, staying essentially within the geographic boundaries of its current

markets. There are two major approaches to expanding the product scope of the firm: (1) by adding products/services related to some of the existing resources of the firm, called related diversification, and (2) by adding products/services unrelated to any of the existing resources of the firm, called unrelated diversification. When pursued for the purpose of financial risk reduction, unrelated diversification generally outperforms related diversification. When pursued for the purpose of firm growth in earnings, related diversification generally outperforms unrelated diversification (Pandya and Rao 1998).

When expanding into product areas related in some way to its existing resources, the firm is able to leverage the profit potential of those resources and needs to acquire only a portion of the resources needed to compete effectively. When expanding into product areas unrelated to its existing resources, the firm, of course, is not able to capture additional value from its current resources, and it must acquire all of the resources needed to compete effectively.

A widely advocated approach to expanding the product/services scope of the firm, sometimes called 'corporate entrepreneurship', is to develop new innovative products/services internally within the firm, leveraging existing knowledge and capabilities. Firms pursuing this approach have to learn to manage the tensions between organizing to exploit existing products/services and organizing to explore new potential new products/services. It is clear, however, that this approach, when successfully managed, creates additional value from existing resources, while often requiring new resources to capture that value.

Managers of firms attempting to overcome declining rates of growth in earnings can choose, of course, to pursue more than one of the above alternative strategies simultaneously. Each, however, requires a different alignment of the firm's organization structure and processes, and demands a different focus of leadership rhetoric. Thus, pursuing more than one of the alternative strategies simultaneously significantly increases the challenges of effective strategy implementation.

Organic Growth by Leveraging Existing Resources

Each of the strategy alternatives discussed above aimed at stimulating higher rates of growth in earnings, except unrelated product diversification, built on, extended and leveraged existing firm resources. In addition, they required either building or acquiring some new resources or assets to compete effectively in new geographic areas, in new market segments, or in new product areas targeted to provide opportunity to increase the firm's growth rate in earnings. Total reliance on a firm's internally generated resources to grow organically appears to limit its opportunities for growth over time. On the other hand, acquiring new resources to supplement and leverage existing resources appears to provide almost limitless opportunities for growth over time.

One recent study provides some empirical support for this argument, though it is limited to a sample of Swedish firms over a 10-year period. The findings of this study were (1) organic growth in the previous period exerts detrimental effects on current growth, and (2) acquisitive growth in the previous period exerts a positive effect on organic growth in the current period. The authors' hypothesis is that when firms make acquisitions they add to their resource base, which in turn expands the firm's 'productive opportunity set'. That expanded 'productive opportunity set' makes possible incremental firm growth (Lockett et al. 2011). This study supports the argument that without expanding the firm's resource base, it cannot effectively pursue many of the opportunities it has to leverage its internal resources, and simultaneously create new opportunities for increased growth. Thus, organic growth based on leveraging existing firm resources needs to be combined with acquisition of additional resources.

The evidence that expanding the firm's product scope into areas unrelated to the firm's resources tends to destroy rather than add value is explainable in terms of theories of efficient markets. If a firm has to acquire all of the resources it needs to compete effectively in a new unrelated product/market area, it has to pay the market

price for those resources. That market price – theoretically – takes into account the value of those resources if they are not acquired. Unless the acquiring firm adds additional value from leveraging its existing resources, there is no way it can earn profits from such an acquisition above those required to meet its cost of capital. Indeed, given the additional costs associated with bringing those resources into the administrative control of a larger corporation requires that the value added by leveraging the firm's existing resources must exceed those costs for the firm to even be able to return its cost of capital.

Thus, corporate managers and directors should become increasingly interested in organic growth through the leveraging of their firms' current resource bases, acquiring additional resources when the combination of the existing with the new creates real value. From an organic growth perspective, mergers and acquisitions are not all bad – only those that don't leverage existing resources are bad!

See Also

- ▶ Corporate Strategy
- ▶ Resource-Based View

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Organization of Production, the: An International Perspective

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Abstract

The availability of new data has allowed researchers to document very large productivity differences across firms. Research also suggests that these differences differ systematically across countries and are especially large in developing ones. Yet the question of why performance between firms seems to vary so much across countries has received surprisingly little attention. National policies, social norms and differences in managerial practices can all influence productivity at the national level. However, institutional conditions may also shape the way in which production is organized. In most parts of the world, a substantial fraction of economic activity takes place in hybrid forms that exhibit a mix of firm-like and market-like attributes. In this article we argue that understanding the role of groups in production is likely to be key in explaining cross-firm and cross-country differences in performance.

Definition The organization of production is a process whereby production factors such as labour, capital and land are coordinated within and across organizations to produce goods and services. This includes an organization's managerial practices and routines, and its cooperative ties to other organizations.

One of the most remarkable facts in economics is the large productivity difference seen across organizations, firms and countries. For instance, US manufacturing plants at the 90th percentile of the productivity distribution produce, on average, almost twice the output with the same observed inputs as plants at the 10th percentile (Syverson

2004). Even larger total-factor productivity (TFP) differences are seen in developing countries. Hsieh and Klenow (2009) find a 90–10 TFP difference of around 5:1 in India and China. More generally, large and persistent GDP and TFP differences are commonly documented across countries (Jones and Romer 2010).

What determines these productivity differences? While many explanations have been put forward, it is only recently that scholars have started systematically to analyse the issue, thanks to the availability of high quality, firm-level data. This literature has linked firm- and plant-level differences in productivity to such factors as capital and labour unobserved heterogeneity, trade openness and managerial practices (see Syverson 2011, for an excellent survey). Yet the question of why performance between firms seems to vary so much across countries has received surprisingly little attention. This is problematic because, at a macro level, a better understanding of the foundations of country-level aggregate productivity is essential for the design of more effective industrial policies. At a micro level, this information may also benefit managers and firms, for instance, helping them manage more effectively the challenges of international expansion.

Of course, country characteristics can affect the way in which firms perform in a number of ways. This article concentrates on a nascent literature that explores how the laws and norms of a country affect the organization of production and, thus, indirectly the ways in which firms perform. By organization of production we mean the process whereby production factors such as labour, capital and land are coordinated within and across organizations to produce goods and services. This includes not only an organization's managerial practices and routines, but also its structure, as seen in scale and scope of operations, as well as its cooperative ties to other organizations.

A large body of research shows that managerial practices and organizational structure are important for performance (Chandler 1962; Bloom and Van Reenen 2007). National laws and social norms can promote or hinder the diffusion of more efficient practices in society. Efficient behaviours often diffuse through an evolutionary process whereby firms with superior capabilities survive and prosper, while those with inferior capabilities shrink and die. There are well-documented empirical correlations between firm-level productivity and size, as well as between firm-level productivity and survival. However, countries might differ in the extent to which this evolutionary process is allowed to take place (Bartelsman et al. 2009a). One reason is policy distortions. Policies that progressively tax or regulate firms, that would otherwise be large given their high productivity, might induce these firms to stay small. These distortions hinder the process of selection and reduce the efficiency of a country's productive system (Olley and Pakes 1996; Bartelsman et al. 2009b).

Another reason why high-productivity firms may stay small is lack of social capital at the country level. Given the bounds to human rationality, managerial decentralization is a precondition for the growth of firms beyond a minimum level. However, managers may be unwilling to delegate responsibilities if they do not trust their subordinates. Bloom et al. (2012) study the determinants of decentralization and the size of firms across countries. Their findings are consistent with the idea that lack of social capital is an obstacle to decentralization and, hence, the growth of firms. They also find that non-hierarchical religions and product-market competition are associated with more decentralization.

A limitation of the above literature is that it focuses exclusively on the firm as the unit of analysis. By contrast, firms typically do not conduct business as isolated units, but rather 'form cooperative relations with other firms, with legal and social boundaries of variable clarity around such relations' (Granovetter 1994: 453). A prominent example of cooperative behaviour is the one that exists among the firms belonging to the same business or corporate group. These groups are collections of firms bound together through financial or social links.

Why do groups exist, and how does group membership affect the performance of affiliated firms? The agglomeration of firms into group organizations is often viewed as a response to imperfect, missing or inefficient markets,

whereby groups perform an intermediation role in markets subject to frictions (Leff 1978; Khanna and Yafeh 2007). Indeed, research suggests that in countries with less developed financial markets or stricter regulations on labour mobility, firms tend to cluster in groups (Belenzon and Tsomon 2013; Belenzon et al. 2013). In these environments, the administrative structure of a group can help, for instance by promoting the sharing and redeployment of resources through internal markets. Business scholars have highlighted several benefits of group membership in, for example, managing and funding R&D (Mahmood and Mitchell 2004; Belenzon and Berkovitz 2010), physical investment (Pérez-González 2005), redeploying managerial talent (Belenzon and Patacconi 2012), and marketing and distributing new products (Khanna and Rivkin 2001). Groups can also perform rent-seeking activities on behalf of their members, especially in countries where the government's intervention in the economy is pervasive and corruption widespread (Encarnation 1989; Fisman 2001). On the other hand, group affiliates may have some of their profits siphoned away by dominant shareholders, or may be obliged to bail out other member firms that are performing badly (Bebchuk et al. 2000; Khanna and Rivkin 2001). These advantages and disadvantages of group membership most likely vary by exogenous country and industry conditions (Belenzon et al. 2010) and, to the extent that they affect several group members in a similar way, may induce a positive correlation between the performance of affiliated firms (Khanna and Rivkin 2001). Future work should exploit these variations to tease out the specific mechanisms through which structure can potentially affect firm performance across countries.

In conclusion, an important objective for policymakers, economists and strategy scholars alike, is to gain a better understanding of the sources of productivity dispersion across countries. An emerging literature suggests that organizational form is likely to explain part of these differences. We need to deepen our understanding of the specific mechanism through which organizations facilitate performance in varying country legal and cultural conditions if we want to make progress.

See Also

- ▶ Firm Size and Boundaries, Strategy
- ▶ Organization Theory
- ▶ Strategic Organization Design

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Organization Theory

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Abstract

Organization studies is a scholarly field that emerged around the study of, and thinking about, organizational decision-making and behaviour. Although the study of organizations had roots in different disciplines, the field itself took off in the 1950s and 1960s with foundational works such as March and Simon (1958) and Cyert and March (1963). Since its beginning, the field has come a long way and has evolved into a 'semi-discipline' of its own (in the words of March, one of the founders), with subfields such as organizational learning, ecology, risk taking, search, design and adaptation. It also has been a key foundation for the creation of the field of strategic management (cf. Rumelt et al., Strategic Management Journal 12: 5–29, 1991), as well as other developments.

Definition The field of organization studies includes research on organizational decision-making, organizational behaviour, design and structures.

Introduction

Despite earlier intellectual roots that can be traced back to Plato, much of what we recognize today as organization studies (or, some prefer, organization theory) has been developed since the late 1950s and early 1960s. Indeed, the field of organizations took off as a scholarly movement after the Second World War, embedded in the larger context of postwar enthusiasm for science, behavioural ideas and management education (Augier 2008; Augier and March 2011; Augier et al. 2005). Foundational works for the field include March and Simon (1958), Cyert and March (1963), as well as the March *Handbook of Organization* (March 1965).

As an interdisciplinary area, the field of organizations in the early years built directly on a variety of disciplinary perspectives such as economics, sociology and psychology; although more recently it has become so successful on its own that it seems to sometimes 'forget' to communicate to the original disciplines on which it was built. But it has been shaped by the institutional, societal and organizational contexts in which it developed early on. Moreover, movements such as the emergence of behavioural social science, attempting to find a common language for studying organizations, as well as developments in the theory of the firm, were crucial for its successful take-off as an academic and scholarly field (Berelson 1963; Boulding 1958; Helmer 1958; Machlup 1967). With the emergence of the foundational works of the carnegie school and subsequent maturation and professionalization of

the field (with its own professional associations and journals), organization studies itself became a semi-discipline with subfields such as organizational design, ecology, learning, risk taking and adaptation. Its history includes a number of perspectives, some more consistent than others, as well as debates, dialogues and crossroads (for a sample, see e.g., (Frost et al. 2000)).

Historical Roots

To be sure, organizations and organizing existed long before organization theory and organization studies emerged as fields in their own right. Likewise, many of the central issues discussed today within the field have been integral to ancient major projects such as the pyramids, the Chinese Great Wall or the Arsenale in Venice. For the most part, however, such issues have been left to archaeology with little attention to the organizing and organization issues, despite some rare exceptions (Zan 2004). More direct intellectual roots for the field came to the fore in the work of scholars such as Adam Smith and Max Weber. Smith, for instance, was aware of the importance of organizational and individual learning and knowledge for economic growth (as evidenced in his famous pin-factory example) where division of labour and increasing returns follows from organizational change and learning. Others (such as Schumpeter, Frank Knight and Alfred Marshall) also did work relating to organizational knowledge, evolution and entrepreneurship. The sociological roots of the field included not only Weber but also Durkheim, Parsons and others. But it was not until the 1950s that scholars started to try to develop a systematic analysis and understanding of the phenomenon of organizations, building on and trying to integrate ideas from several different perspectives.

In his comprehensive overview and inventory of the field, W. Richard Scott (1992) traces the institutionalization of the field of organizations, from early sparse interests on organizational issues within disciplinary domains to a new perspective (or set of perspectives) with a shared focus on the organization and the aim to describe, explain and – at least in the original intent also – influence what happens in the general set of organizations.

In addition to disciplinary (economic, sociological, political) roots, there were also 'pre-roots' in the 1930s and 1940s with empirical studies within criminology (Clemmer 1940), political science, industrial psychology and management (Fayol 1930; Gulick and Urwick 1937), as well as theoretical contributions within economics, which concerned organizations. However, they often missed some of the essential properties of a scholarly perspective. First, the focus of the analysis was on the peculiarity of the empirical field and hardly searched for extensions to the general population of organizations. Second, when such studies addressed more general questions – for example industrial psychology on turnover, morale and effort were tackled – they did not systematically consider the organizational structure as a relevant variable. Third, as in management and administrative studies (Fayol 1930; Gulick and Urwick 1937), they aimed at maximizing effectiveness and efficiency rather than at identifying properties of organizational design or change. Despite the significance of such individual contributors, there was no systematic attempt to study organizations and, in the 1950s, scholars from different disciplines started identifying the need for a more systematic perspective, identifying the disciplines on which it could be built on as well as discussing the need for a common language (Boulding 1958; Litchfield 1956).

According to Scott, two main events may account for the birth of organizational as a field. First, in sociology, the diffusion of the theory of bureaucracy by Weber (1946, 1947), which inspired several theoretical and empirical studies focused on organizations by Merton and his students (Merton et al. 1952), as well as case studies by Selznick (1949), Gouldner (1954), Blau (1955) and Lipset et al. (1956). These contributions first addressed the formulation and empirical test of theories concerning the structure and functioning of the broad and general category of organizations. Second, the foundation of an interdisciplinary debate at the Carnegie Institute of Technology in the late 1940s and 1950s by Herbert Simon and

colleagues provided a common perspective to robustly address the broader set of organizations. The Carnegie School provided a foundation for the field to consolidate, mature and grow as well as developing a basis for further empirical studies of organizations. A key work was March and Simon's *Organizations*. Embedded in and building on the emerging behavioural social science and economics perspectives, March and Simon (1958) surveyed existing work in organizations and began to outline the common language needed, with foundational concepts such as organizational slack and routines. A companion piece (Cyert and March 1963) established a dialogue with economics around organizational decision-making issues – and together with the associated scholars at Carnegie and a number of influential articles, the Carnegie perspective on organizations emerged as intellectual front for the field. Other books in this period such as Blau and Scott (1962) also helped build the field, and the foundation of a new interdisciplinary journal, *Administrative Science Quarterly* (Litchfield 1956), in turn contributed to systematize it around a true interest on organizations (Scott 1992).

Moreover, an early handbook of the field (March 1965) provided an overview of the perspectives, topics and methods used. Important to note is that it was still relatively coherent and built on the existing disciplines. Each discipline brought its own perspective and focus on organizations: political scientists study power processes and decision-making, economists address allocation problems with attention in particular to efficiency and productivity, sociologists were interested in status orderings, norms and behaviour, and psychologists' view considers as crucial elements of organization systems perception, cognition and motivation of participants. On the basis of a new shared interest in organizations, and building also on classics such as Smith (1776) and Machiavelli (1988), authors such as Marx (2004), Durkheim (2014), Taylor (1911) and Fayol (1930) as well as Mayo (1945) and Barnard (1938) were rediscovered as precursors in the field of organization studies.

Important steps towards the professionalization of the field were taken with the establishment of journals such as *Organization Science* (1990), as well as professional societies and groups around themes listed in the Academy of Management such as organizational cognition, operations, communication and information systems, change and development. As each of these perspectives within the overall umbrella of organizations has evolved, they have developed not as a single, independent field of study, but instead in different and not always consistent directions.

Diverse Perspectives Around Diverse Concepts of Organization

Scott's landmark overview of the field (Scott 1992) organized the study of organization around three pillars (rational, natural and open systems), each providing a main framework for identifying main streams of literature in organization studies. Perspectives that view organizations as rational systems focus on organizations designed to achieve specific goals. These studies are meant to increase productivity and efficiency, and to provide solutions and useful theorizations for this purpose. The rational approach includes Smith (1776), Weber (1946, 1947), Durkheim (2014), Marx (2004) as well as the founders of *Scientific Management*, Taylor (1911) and Fayol (1930), and aimed at finding the 'one best way' to manage organizations thanks to the application of scientific method. They were concerned with issues such as coordination, interdependence and division of labour that are inspired by operations along the production line, while Weber (1946, 1947), for example, addressed more broadly the 'administration' and developed theories on the rational structure of the organization that was based on standardized behaviour through rules and procedures, command and control.

Later evolved more natural and open systems (1992). Contributions that see organizations as natural systems view goals as less known and given, and often undermined and distorted, and informal structures as often more important than formal ones. In this stream, the behavioural perspective (Cyert and March 1963; March and Simon 1958) highlighted the limits of rationality

in decision-making and organizing from individual transfer to organization structures and actions. They challenged the idea that organizations and its members behave rationally. In addition, other contributions introduced the idea of organizations as open systems that are immersed and permeated by the environment (Scott 1992). In this tradition (Hatch and Cunliffe 1997), systems theories, for instance, explain that organizations are built of interdependent subsystems that adapt to the environment by interacting, typically through feedback mechanisms. Another tradition around contingency theories emphasizes that there is no 'one best way' to manage, but organizational solutions depend on the properties of the context they address.

Scott also mentions the contributions by Berger and Luckmann (1966) (on the importance of shared meanings, history and interpretations) as well as Karl Weick (on sensemaking) as central modern developments. Later contributions have included 'postmodern' approaches building on linguistic and philosophical traditions from Derrida and Foucault. While the numerous contributions, diffusion and developments in the field are signs of its success as a field, it also carries with it some dangers of fragmentation and incoherence; dangers that it shares with the sister field of strategy.

Organizations and Strategy

The importance of organizations for strategy is not new and originated in military strategy, before the field of business strategy was formed (Augier et al. 2014). Classic military theorists such as Sun Tzu and Clausewitz both noted organizational issues present in military strategy. Clausewitz also noted organizational issues such as failures, adaptation, friction and bounded rationality as arguments that the fog of war makes clear decision-making in battle difficult. The early empirical strategy studies were rooted in studies of organizations and organizational functions such as leadership and planning, often with reference to particular companies in industries such as telephone and railways. As the scholarly field of business strategy began to emerge, that too was rooted in organizational ideas (e.g., Barnard 1938; Chandler 1962). Thus it is no surprise that a key intellectual root for the field of strategic management has been organization studies, in particular the Carnegie perspective, since the beginning (Rumelt et al. 1991).

As the theory of organization studies and strategic management have co-evolved, intellectual crossfertilization has continued. Both are major study and research areas within the larger context of business schools and management education, and scholarly contributions to areas such as organizational evolution, adaptation and learning often have significant strategic implications (March 2006; Simon 1993). Studies of particular organizational functions such as leadership and entrepreneurship also continue to be influenced by (and influence) the fields of organizations and strategy in many ways and to help bring the fields forward.

Although successful, the field of organizations also faces some potential difficulties which may influence strategic management. With the success of the fields has come an increased professionalization and a tendency to spin off into subfields of its own, with the possibility of fragmentation and incoherence (Pfeffer 1993). This is manifested in the diverse approaches from rational choice and game theory over institutional and evolutionary theory, and to postmodern and meta-feminist approaches – all of which seem to be part of the modern organization study scholars toolkit. But part of the reason the field was successful in the beginning was that it sought to engage with the disciplines, not just between them. The early generation of 'organizational theorists' such as March, Simon, Selznick, Bavelas, Cyert and others were trained in the disciplines and wrote for disciplinary journals (as well as interdisciplinary ones), facilitating learning from (and to) the foundational disciplines, but in an interdisciplinary way. Organization scholars and strategy scholars alike can learn much from using different disciplinary perspectives to study organizational and strategic phenomena, and to try to communicate the insights from organizations and strategy back to the disciplines (as do some scholars in organizational ecology and organizational

economics perspectives). In so doing they may need to balance exploration and exploitation in an intellectual way (March 1991), weighing using existing ideas with seeking new ones – as well as keeping an empirically relevant perspective (Simon 1947) and a healthy two-way street between scholarly ideas and the dynamics of real-world organizational behaviour.

See Also

- ▶ Bounded Rationality
- ▶ Cyert, Richard M. (1921–1998)
- ▶ March, James G. (Born 1928)
- ▶ Organizational Learning
- ▶ Simon, Herbert A. (1916–2001)

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Organizational Ambidexterity

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Abstract

A fundamental challenge for organizations is how to compete in mature markets where the organizational alignment emphasizes exploitation (efficiency and control), and simultaneously in new or emerging technologies and markets where the alignment emphasizes exploration (innovation and autonomy). This ability has been referred to as 'organizational ambidexterity'. Recent research has suggested that a firm's dynamic capabilities underlie this ability as senior managers orchestrate the reallocation of resources to pursue both exploration and exploitation

Definition Organizational ambidexterity refers to the ability of an organization to simultaneously compete in mature markets where exploitation is the dominant mode of competition and in new or emerging technologies and markets where exploration and innovation are required.

How do organizations survive in the face of change? Research has suggested that only a tiny fraction of US firms reach the age of 40 – and that the life expectancy of a large US company is between 6 and 15 years (Agarwal and Gort 1996; Stubbart and Knight 2006). Research by organizational ecologists suggests that organizations are largely inert and do not change (Hannan and Carroll 1992), leading some authors to conclude that 'the strategic manager's job is in fact futile in the face of environmental disruptions' (Dew et al. 2006: 79).

But some organizations do adapt and survive for long periods. To do this requires that firms both exploit their existing resources and competencies and explore new technologies and markets. In the words of Jim March, 'The basic problem confronting an organization is to engage in sufficient exploitation to ensure its current viability and, at the same time, devote enough energy to exploration to ensure its future viability' (March 1991: 74). Drawing on research in both evolutionary biology and strategic management, this process is referred to as *organizational ambidexterity* – or the ability of an organization to compete simultaneously in both mature and emerging markets – to explore and exploit (O'Reilly and Tushman 2008).

Exploration and Exploitation

In the early 1960s Tom Burns and Gordon Stalker (1961) observed that firms engaged in more innovative pursuits had organizational structures that were quite different from those in more routine activities. They characterized these different structures as *organic* and *mechanistic structures*. In the following 50 years, research has largely confirmed their initial insights (e.g., Sine et al. 2006). Exploitation is about efficiency, increasing productivity, control, certainty and variance reduction. To accomplish this requires that firms employ people with deep expertise, develop clear structures, processes, and metrics and develop cultures that value discipline, meeting commitments and delivering short-term results. Exploration, however, is about search, discovery, autonomy, innovation and embracing variation. Organizationally, this requires people who may be more creative, structures and processes that are looser and more flexible, and

cultures that value risk taking and flexibility more than discipline and results. Organizational structure is developed to reflect the environment in which the firm operates (Siggelkow and Rivkin 2005).

Dynamic Capabilities

But what happens when the competitive context shifts? Strategy researchers have argued that dynamic capabilities, or the ability of the firm to sense, seize and reconfigure tangible and intangible organizational assets, are at the heart of the ability of a firm to sustain competitive advantage in the face of change (Helfat et al. 2007). Organizational capabilities are embedded in its existing organizational routines, structures and processes. More specifically, these routines are found in the way the organization operates, its structures, cultures and the mindset of senior leadership. These capabilities, sometimes characterized as high level routines or processes (Winter 2003), or routines to learn new routines (Eisenhardt and Martin 2000), are now seen as a central underpinning of long-run competitive advantage. It is the ability of senior managers to seize opportunities through the orchestration and integration of both new and existing assets to overcome inertia and path dependencies that is at the core of dynamic capabilities.

The emerging research on dynamic capabilities, and how these provide firms with long-term competitive advantage, offers a promising way to explain organizational adaptation. Although this research is in its early stages, studies have already illustrated how capabilities may affect organizational performance and survival (e.g., Adner and Helfat 2003; Danneels 2010; Rosenbloom 2000; Tripsas 1997).

Organizational Ambidexterity

In organizational terms, dynamic capabilities are at the heart of the ability of a business to be ambidextrous – to compete simultaneously in both mature and emerging markets – to explore and exploit. As a dynamic capability, ambidexterity helps organizations sense and seize new opportunities and to mitigate the effects of path dependence. In this regard, ambidexterity does not mean random variation but a deliberate approach to variation-selection-retention that uses existing firm assets and capabilities and reconfigures them to address new opportunities. When adopted explicitly, this approach involves deliberate investments and promotes organizational learning that results in a repeatable process (e.g., Harreld et al. 2007).

There is a growing body of empirical evidence that some firms can work in this way (e.g., Harreld et al. 2007; He and Wong 2004; Probst and Raisch 2005; Tushman et al. 2010). These and other studies have suggested that the combination of exploration and exploitation is associated with longer survival (Cottrell and Nault 2004), better financial performance (Govindarajan and Trimble 2005) and improved learning and innovation (Adler et al. 1999; Holmqvist 2004; Rothaermel and Deeds 2004). Taken as a whole, these and related research on organizational learning, absorptive capacity and organizational inertia (Gilbert 2005; Levinthal and March 1993; Siggelkow and Rivkin 2005) provide a window into the linkage between dynamic capabilities and ambidexterity.

To be successful, ambidexterity requires a willingness of senior managers to commit resources to exploratory projects, the flexibility to design organizational systems that have different alignments (explore and exploit), incentives and structures that permit targeted integration across organizational units to capture the advantage of co-specialized assets, and the appropriate staffing and management of these units. This entails not only separate structural units for exploitation and exploration but also different competencies, systems, processes and cultures – each internally aligned. These separate units are held together by a common strategic intent and an overarching set of values, and orchestrated by a senior team capable of managing these inconsistent alignments and complex trade-offs in a consistent fashion (O'Reilly and Tushman 2008).

In their review of organizational ambidexterity, O'Reilly and Tushman (2008) note a number of unresolved questions needing further research. First, there is still a question about the level of analysis at which ambidexterity occurs. Some scholars have argued that ambidexterity can occur at the individual level (Gibson and Birkenshaw 2004) as well as at the business unit or organizational level. Second, a question remains as to whether ambidexterity occurs sequentially with separate periods of exploitation and exploration (e.g., Brown and Eisenhardt 1997; Duncan 1976; Nickerson and Zenger 2002) or simultaneously (e.g., Adler et al. 1999; Tushman and O'Reilly 1996). Third, there is still ambiguity about when and how ambidexterity is useful and when it is inefficient. Too much emphasis on exploration risks pursuing bad ideas; too much exploitation can lead to fatal missed opportunities. The balance may depend critically on the speed and type of change confronting organizations (Uotila et al. 2008). Finally, there remain issues around how managers might implement ambidexterity (e.g., Jansen et al. 2009; Smith 2009; Zhiang et al. 2007).

Schumpeter observed that capitalism is fundamentally an evolutionary process. Organizational ambidexterity offers an evolutionary lens through which to understand how organizations can evolve (O'Reilly et al. 2009). Accepting that variation-selection-retention is a powerful logic for adaptation does not mean that it be mindless. As March notes, 'Evolutionary engineering. . .might be small precise changes that can be achieved by modest, timely interventions [that] produce large, permanent effects' (March 1994: 49). Ambidexterity is one way in which managers may encourage organizational adaptation.

See Also

- ▶ Dynamic Capabilities
- ▶ Innovation
- ▶ March, James G. (Born 1928)
- ▶ Organization Theory

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Organizational Change

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Abstract

Organizational change is a core concept in strategic management, because it is widely recognized that organizations must change to survive in a world characterized by technological and scientific progress, rapid communication and intense competition. Strategy pertains to how an organization plans to gain or maintain a position of advantage over competitors, and organizations often need to change to support the execution of strategic plans. Research on organizational change examines two basic phenomena: (1) how organizations adapt or fail to adapt naturally as the world around them changes, and (2) how leaders of organizations attempt to produce change believed to be needed for successful execution of the organization's strategy. This essay briefly summarizes work on the first phenomenon and emphasizes the second as a more central concern for strategic management. I thus summarize core ideas from research on deliberate change, and end with a description of an organizational learning perspective as a paradigm with growing relevance for research and practice in leading planned change in an uncertain environment.

Definition Organizational change refers to substantial shifts in direction, structure or process that shape how an organization works. Change is organizational when it involves substantial portions of an organization. Organizational change encompasses two distinct phenomena: *naturally occurring change* and *managerial efforts to produce change.*

Organizational change is a core concept in strategic management because organizations must change to survive in environments characterized by technological and scientific progress, rapid communication and intense competition. Strategy pertains to how an organization plans to gain or maintain a position of advantage over competitors. For strategic plans to produce results, organizations must be structured and managed to execute them. When there is a gap between strategic aims and organizational realities, an organization must change from its current state to a preferred state to execute effectively. In particular, organizational change may be needed to develop or improve key work processes through which products or services are delivered to customers. Change may involve implementing new technologies, changing an organization's culture or simply motivating adherence to specified work processes.

Research on organizational change examines two basic phenomena: (1) how organizations adapt, or fail to adapt, naturally, as the world around them changes, and (2) how leaders of organizations attempt to produce changes they see as necessary for execution of the organization's strategy. The second phenomenon is a central concern for strategic management. Core ideas from research on deliberate change are thus summarized below. I then present an organizational learning perspective as a new paradigm on leading change, with particular relevance for organizations operating in environments of high uncertainty.

Naturally Occurring Organizational Change

One tradition in organizational research examines how organizations change over time, driven not by managerial change programmes but by natural change processes in complex social systems. A dominant theme in this research is that organizations tend to resist change, even when the environment requires them to change to survive (Miller and Friesen 1980). An *organizational ecology* perspective (Hannan and Freeman 1984) argues that organizations rarely if ever change substantially; instead, they persist in old routines when the environment substantially changes, and fail as a result – becoming extinct, like species in biological ecologies. Competing perspectives on naturally occurring change (e.g., Hrebiniak and Joyce 1985; Burgelman 1991) present models of organizational adaptation in which organizational shifts *do* occur, not in ways that are envisioned and guided by senior executives but as a function of internal experiments and selection processes that are not well understood by organizational actors at the time. Recent work on naturally occurring change has documented both macro-institutional dynamics of the environment that lead to organizational shifts (e.g., Henisz and Zelner 2005) and micro-dynamics of organizational routines as a source of both stability and (paradoxically) change (e.g., Rerup and Feldman 2011).

Deliberate Organizational Change

An extensive body of research on managerial efforts to produce organizational change includes descriptive and normative work, and addresses both scholarly and practitioner audiences. Targets of planned change include ▶ organizational culture, operations or work processes, new technology implementation, or the integration of formally separate organizations such as in a merger or acquisition. Also referred to as *organization development*, this approach involves the use of behavioural science methods to achieve system-wide change (Beckhard 1969; Beer 1980). In this literature, the production of change has tended to be seen as the province of senior executives, who formulate strategy and assess the current state of the organization for its suitability in executing that strategy. When leaders detect a gap, they are motivated to initiate change (e.g., O'Reilly and Tushman 2002).

Classic models of change management present sequential steps for effective implementation of planned change. Perhaps the best known of these is the work of John Kotter (1995), whose eight-step model of change is well known to both scholars and practitioners. For conceptual clarity, I organize the eight steps into three temporal phases. The first three steps (create urgency, form a coalition, create a vision) comprise a period I call 'getting started'. The next three steps (communicate the vision, remove obstacles, create short-term wins) are devoted to 'involving everyone'. The last two steps (build on the change, anchor the change in the corporate culture) comprise a phase of 'institutionalizing the changes in the organization'. This model presents a top-down approach in which organizational leaders identify a strategy, form a vision and systematically engage people throughout the organization in making the operational and behavioural changes needed to manifest that vision. The research supporting the model consists primarily of case studies of successful and unsuccessful change.

In the management practice literature, changing an organization's culture is one of the most common change goals (e.g., Katzenbach et al. 2012). Culture is defined as fundamental assumptions, norms of behaviour and attitudes that shape the way people work and interact (Schein 1985). Because culture pertains to largely taken-for-granted phenomena, it is notoriously hard to change (e.g., Beer et al. 1990; Kim and Mauborgne 2004).

More generally, this research has emphasized that psychological, group and structural factors make organizations resistant to managerial efforts to change them (e.g., Beckhard 1969; Walton 1975; Argyris 1990). Individuals are reluctant to alter practised, skilled or routine behaviours (Argyris 1990), and group or organizational routines are especially resistant to change (Gersick and Hackman 1990; Edmondson et al. 2001). Without strong motivation, including a compelling rationale for change and evidence that a respected leader or role model is doing things a new way, individuals tend not to change their behaviour. Further, in change efforts, early changes may be followed by a reversion to old ways. Sometimes change efforts make things worse before people gain enough experience to improve new approaches enough to see positive results (Senge 1990). Making a new practice work may require numerous behavioural adjustments (Tucker et al. 2007), such that initial results place the change in a bad light, further reducing effort and engagement by those targeted for the change. Finally, leaders of organizational change may lose interest, become distracted by other responsibilities or prematurely assume a change has taken hold.

Teams as Agents of Change

Some of the barriers to organizational change are lowered by the use of groups, rather than individuals, as change agents (Hackman and Edmondson 2007). Although the use of groups as agents of change does not ensure success, it encourages inclusion of multiple perspectives and local actors in the design and implementation of change.

Compared with individuals, groups leading organizational change have several advantages (Hackman and Edmondson 2007). First, the change effort's momentum is less vulnerable to turnover; a single individual leading change might be off sick, lose interest or leave for a new job, unlike a team of people who can cover for each other and help each other sustain momentum and commitment to the change. Second, if team members represent key constituents targeted for change, the initiative is likely to have greater credibility in the organization than it would if it were led by an individual from only one department, even a very persuasive one. Change teams should include individuals from multiple functions and levels to ensure legitimacy in engaging people throughout the organization, and to effectively identify detailed aspects of the organization in need of change (Beer 1980; Kotter 1995). Third, producing organizational change requires diverse competencies to effectively design, plan, analyse, communicate and engage effort; this range is more likely to be found in a well-composed team than in any one person.

Organizational Learning Versus Change Management

Another new perspective also views teams as agents of organizational change, because teams are the locus of organizational learning (Senge 1990; Edmondson 2002). Teams do the actual work that translates inputs into products and services, and so teams must change what they do, or how they do it, to produce organization-level change. This is a learning process.

Classic models present *change management* as the systematic implementation of a plan aimed at improving organizational performance with specific practices, structures or management techniques (Edmondson 2012). Change plans are rooted in existing knowledge and have established utility in prior settings. The approach assumes that knowledge for how to improve performance in the current setting exists, and that implementing it is a matter of ensuring compliance with new processes and behaviours. Implementation of change thus occurs through logically sequenced steps, with phases and milestones.

Increasingly, however, many organizations lack the knowledge of how to produce better results at the outset, because solutions do not yet exist either within or outside the organization (Edmondson 2012). This is the case when the environment is characterized by high uncertainty. Without a blueprint to guide change, managers instead must lead a process designed to create new knowledge, which we can conceptualize as a collective learning process.

According to this perspective, organizational change is an *organizational learning* process through which an organization iteratively discovers new, better practices, rather than a *change management* process designed to systematically implement existing practices (Tucker et al. 2007; Edmondson 2012). Like change management, an organizational learning approach starts with the recognition of a need or opportunity for new approaches to meeting stakeholder needs. However, it diverges from change management by requiring the invention and trial of new strategies to enhance the organizational performance (Senge 1990; Garvin 2000; Edmondson 2012).

Conclusion

Organizational change is an inclusive concept that encompasses heterogeneous ideas and research in the management literature. Its primary importance for strategic management relates to the need for, and the enabling of, organizational leaders to help bring about the changes that allow organizations to continue to survive in a dynamic world.

See Also

- ▶ Adaptive Aspirations
- ▶ Business Process Re-engineering
- ▶ Human Resources
- ▶ Leadership
- ▶ Learning and Adaptation
- ▶ Learning and Organizational Failures
- ▶ Organizational Culture

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Organizational Culture

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Abstract

Organizational culture is an elusive concept. It has remarkable face validity – everyone seems to understand what culture is – but often that understanding is vague and/or incomplete, and there can be as many definitions of culture as there are people studying it. This entry defines organizational culture through a popular framework or tool for analysing culture. It is descriptive but also practical. It emphasizes something senior and seasoned leaders appreciate – how understanding the organizational cultures they actually maintain, not just the ones they wish for, is crucial to effective strategic management.

Definition Organizational culture encompasses all the values, beliefs and assumptions that organizational members come to hold over time and which are (to some degree) shared. They are evident in behaviours and a wide range of artefacts, not all of which, however, necessarily support the statements organizations make about themselves.

A starting point in understanding what organizational culture means is to appreciate the subtle difference between saying 'organizations have cultures' and 'organizations are cultures'. The former gives the impression that, like office buildings, retained earnings, and an onsite crèche, organizations possess culture in the way they possess any other asset: useful things but not necessarily things that define them in essential ways. The second statement is more accurate, suggesting that to examine and understand an organization's culture is to look at the essence of what that organization *is*. This may sound unnecessarily academic, but it is important. It's too easy for managers to do a quick scan of their organizations, fix on a few peripheral features – for example, some feature of their brand or the image they wish to convey to customers and clients – and claim that this is the organization's culture. They may say, for example, that Disneyland's culture is about perky smiles, courtesy and the idealism embedded in the many heroic figures on display. This would be facile at best and inaccurate at worst, ignoring the enormous discipline, rigid pecking order and enforcement that have to be developed among Disneyland's cast members to offer those experiences, as good ethnographic accounts have shown (Van Maanen 1991). By contrast, to look at what an organization is offers

an approach that stresses the leverage of culture: organizations comprise core ideas that can be enacted in many different settings, spreading out and impacting on behaviours in distant places and processes – think of banks who must have stringent compliance systems for their core business processes, for example when accepting large deposits, but then observe, often with frustration, that this 'compliance culture' permeates many other routines, such as how they hire people or reimburse travel expenses. Crucially, organizational culture needs to be taken seriously if managers want to really know what makes their companies tick. Further, we have to be willing to accept a certain amount of complexity, abstraction and a lack of easy answers in defining what that culture is. Managers in a hurry will produce poor cultural analysis. Good managers are one part psychologists, to deal effectively with people, but one part sociologists, to understand the social complexity that is an organization.

Let us deal first with defining organizational culture, before turning to the power and implications of organizational culture for strategic management. A single sentence definition could run: *organizational culture is all the values*, *beliefs and assumptions which organizational members come to hold over time and which are* (*to some degree*) *shared*. But it is probably easier to approach the definition of organizational culture by looking at models of culture, easier because a good model can unpack a complex concept into bite-size elements. One of the most popular models comes from Schein (1992, 1999), who has devoted much of his career to helping us understand organizational culture. There are other models and many definitions, and an excellent overview and historical summary is provided by Weeks (2003), but Schein's framework is powerful because it provides a useful unpacking of the essential components of organizational culture and a valuable normative point about its use.

Organizational culture consists of three main components: artefacts, espoused values and assumptions. These are arranged hierarchically, meaning that usually we need to start with artefacts and dig our way down to assumptions. Artefacts are the visible features of the organization, or what we can think of as the physical or behavioural part of culture. How do people talk to one another? Do people always defer to someone of higher rank in converstrun? What is the office layout? Does the presence of cubicles and open spaces encourage easy and frequent interaction – do people just drop in on colleagues, or are appointments the norm and privacy fiercely guarded, as if people weren't visible to one another at all? How do people behave in meetings? Do they arrive late (who arrives late?), do they fiddle with their phones while others are talking, do they leave early? And so on. Understanding organizational culture must begin with a hard look at the artefacts. This has less to do with following analytical protocol than the simple fact that we cannot fully access culture otherwise. Values are not visible: they lodge somewhere in our brain and, at present, we can only capture them by looking at what people *do*.

We can also look at what people *say* about their culture, and this is the level of espoused values. Espoused values are the values we think we have, or wish we have. Here are some common values large corporations claim as part of their cultures (often publishing these values on corporate websites): integrity, creativity, community, customer value, respect, openness, quality. We may also see these printed in booklet form, as well as on coffee mugs and mouse pads. These are good starting points for understanding organizational culture, in so far as they tell us what is desired and valuable. But we should not assume such wish lists are the reality. Once again, we should take a hard look at the artefacts.

The final, and deepest, component of Schein's model is basic assumptions. Basic assumptions are the components of culture that are taken for granted, the beliefs and values which drive our behaviour on a daily basis but which we do not readily articulate or acknowledge. They form the premises for our everyday decisions, 'rules-etched-in-the-head' which are triggered in certain circumstances and which are replayed automatically without much conscious thought. We do not articulate them easily, partly because they have passed inspection somewhere in the history of the organization and are linked with success (or at

least its perception), and so they are considered above reproach or questioning, even taking on religious qualities. For example, consider Polaroid corporation and their experiences with digital imaging. Polaroid was well ahead of the pack in developing technologies that are necessary for advanced digital imaging (high-resolution digital cameras). But Polaroid senior managers shared a common assumption for business success in this domain, the so-called razor-and-blade model (you sell the proprietary razor cheaply but make money on the blades, or, in their case, you keep camera prices low but make money on the film). One study found that this deep-seated assumption within Polaroid created widespread inertia within the organization and restrained their development of digital cameras (which do not need film) (Tripsas and Gavetti 2000). Polaroid could also articulate this assumption, but sometimes we are unable to acknowledge our assumptions, often because it can be embarrassing to do so. I have witnessed interactions between executives and their CEO which display eye-popping rituals of obsequious kowtowing and agreement, and then very delicate political maneuverings behind the scenes through 'preferred' envoys to get difficult points across. These rituals are time-consuming and at moments demeaning but very awkward to acknowledge or surface. They are simply 'the way things work around here'. If one were to ask people why they work this way, the surest answer would be that they have always worked this way.

Assumptions, then, are powerful because they are automatic and silent. This need not raise fear and worry about inertia, however, as the examples above evoke. In fact, we may have quite the opposite reaction, a much more exciting one. It's the difference between labelling this automaticity as 'inertia' or 'momentum', or a negative versus positive connotation. The positive power of organizational culture – the reason it has drawn so much attention since Peters and Waterman's seminal work *In Search of Excellence* (1982) – is in the remarkable efficiency of thought and action that a strong culture can provide. If a company can find true alignment between its strategy (how it competes and distinguishes itself from competitors in the minds of customers) with the fundamental assumptions held by employees, and if these assumptions are then played out every hour of every day, reproduced flawlessly and efficiently (without the need for debate or people being told what to do and incessantly monitored) in numerous artefacts (the power of leverage) this is a powerful formula for success. We need to add one other observation made by strategy scholars, which is that organizational cultures, because they can be complex and/or take time and a certain path through history to develop and refine, may not be easily deciphered and copied by competitors (Barney 1986). When you combine the silent efficiency of assumptions and the difficulty of copying them, you have established a fundamental reason why organizational culture is a strategic asset and an important component of any discussion of strategic management.

Finally, there are two caveats regarding organizational culture that are important to its understanding. The first is differentiation. There is debate whether an assumption or value counts as culture if it is not widely shared (Martin 1992). There are certainly cultural differences within large organizations, and not only between large divisions but within those divisions. Those subcultures can be powerful and display the sort of efficiency described above – the bigger issue is whether they are effective in combination, complementing each other, or whether they clash furiously, as many failed mergers and acquisitions will attest to. Cultural differentiation is probably more a matter of degree than type: there comes a point where so few members share related assumptions that it would be more difficult to refer to them as *organizational* culture in the sense described above.

The impression given by this entry may be that culture is (only) inertial and that the issue revolves around whether that inertia is positive or negative for strategy (or perhaps of no consequence at all: the organizational equivalent of our appendix or wisdom teeth). But cultures are dynamic and can change. This is easier to see if we accept the second caveat, that cultures are also fragmented, that there will be much that is shared in the minds of an organization's employees but there will also

be some differences, however small, in the basic assumptions of a particular employee and how those assumptions are reproduced in behaviour. This perspective views organizational culture as a population of assumptions and ideas (Weeks and Galunic 2003). It is a dynamic view because for that cultural population to be sustained it must be replayed all the time, as people act upon their assumptions and reproduce them in behaviour. Most of the time, this reproduction of culture will be efficient and consistent, but every now and then, like genetic mutation, there may be 'flaws' in that reproduction, perhaps experiments to the existing order, which, for various reasons, may become accepted and themselves, eventually, shared and taken for granted. Since this happens frequently in organizations we can claim that organizational culture is not only dynamic (in motion) but also able to experience change (modification). Directing that cultural change in a desired direction, of course, is far from trivial and another fascinating topic organizational culture adds to strategic management.

See Also

- ▶ Organizational Change
- ▶ Organizational Learning
- ▶ Organizational Routines

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Organizational Design

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Abstract

Organizational design is concerned with aligning critical elements of the organization with situational factors facing the firm to affect a criterion (or criteria) of interest. Major perspectives on design can be classified as either classical or contingency approaches. Classical theories advocate universalistic prescriptions concerning design. Contingency approaches argue that appropriate choices of design depend on factors like technology, environmental uncertainty or information-processing needs. The central concept in modern organizational design is the fit between these organizational and situational variables.

Definition Organizational design is the process that aligns critical elements of the organization with specific situational factors facing the firm to affect a criterion of interest.

Organizational design is not a new activity. It has existed since the very first organizations were formed. One can find reference to elements of organization design in even very old sources. One of the earliest is this quotation from Exodus 18: 25 and 26, in which Jethro, Moses' brother-in-law, offers him management advice:

> The way that you are managing is not good. The job before you is too hard, and both you and the people with you will suffer if you try to do it alone. You

> must provide direction, but the people must make decisions about the things that they know the most about.

Here Jethro is speaking about the delegation of authority, one of the most important characteristics of organizational design. This concept is related to the current topic of empowerment, so what seems new is really something quite old.

Early religious, military or everyday writing about organizations has been replaced by systematic attempts to understand the process of organization design and improve its outcomes, principally through the use of scientific methods. There have been two major schools of thought that have emerged for this purpose. These are classical or universalistic approaches to design and more modern contingency approaches.

Classical Design

The central argument of classical design approaches is that there is a single best way to design an organization. Early writers such as Fayol (1916), Gulick and Urwick (1937), and Weber (1968) proposed principles of organization that were believed to hold in all circumstances. These principles were mainly derived from experience in industrial or military contexts, although Weber's ideas were most pertinent to sociological theory. In addition to their assertion of a single best way to organize, these approaches also shared other properties. They were based upon closed systems views of organizations. There was little mention of the firm's environment (from which it would obtain needed inputs) or of its intended outputs (profitability, market share, returns to shareholders). Instead, these approaches concentrated on the organizational methods for transforming inputs into outputs.

The theory that was derived was therefore an essentially closed systems theory of organizations, one that was inconsistent with the obvious reality that organizations must obtain inputs from their environments and then transform them to desirable outputs, which are absorbed by the environment in such a way as to ensure the survival of the firm.

A second problem was that the principles composing the theories were believed to be true in all cases. Unfortunately, this proved not to be so. For example, one principle advanced by Gulick was that the optimum span of control, true in all cases, was six. While this is not a bad number to pick, if one may have only one, it is inconsistent with other supposedly universal rules. One of these is that the number of levels of organization should be minimized. Application of these two principles to the same large organization would yield two quite different structures: one very stratified because of the need to keep spans of control at six, the other quite flat because of the need to minimize the number of levels. A universal theory is not able to resolve these inconsistencies.

Fortunately for these theories, they were developed at a time when organizational environments were considerably more stable than they are today. Characteristics of environments could be given less importance in favour of developing highly efficient operating systems. However, as business environments became more and more changeable and turbulent, the older approaches became inadequate and a new theory was needed. This new theory took the form of what are now called contingency approaches to organizational design.

Contingency Theory

Contingency theory adopts as its central premise the idea that there is no such thing as a 'one best way'. Rather, what is best is determined by the criterion of interest and the situation within which we are attempting to influence this desired outcome. Organizational design must therefore be specific in identifying which characteristics of the situation influence intelligent selection and arrangement of organizational elements to affect the desired criteria. The theory that emerged to address these issues was structural contingency theory (Hrebiniak et al. 1989).

Three major properties of the firm's situation emerged as important determinants of organizational design. These were the technology of the firm (Burns and Stalker 1962; Thompson 1967; Perrow 1972), the characteristics of its

environment (Lawrence and Lorsch 1967; Thompson 1967) and the information-processing needs of the organization (Galbraith 1973; Hrebiniak and Joyce 1980). All these works were highly influenced by March and Simon's (1958) notion of bounded rationality, which proposed that human decision-making has cognitive limitations, and that organizations are essentially mechanisms for achieving bounded rationality in the face of these limitations.

The technology perspective argued that the method used by the firm to transform inputs to outputs has an impact on how the organization should be designed. Although technology was the core concept, various aspects and measures of technologies were utilized to test this general hypothesis. Burns and Stalker believed that the key aspect of technology affecting organizations design was the rate of change in technology. Their case studies showed that the greater the amount of change in technology the more firms tended to non-bureaucratic organization designs. Woodward relied upon the notion of production continuity to characterize different technologies as unit-small batch, large batch and continuous process technologies. She was able to show interesting relationships between technology conceived in this manner and various spatial measures of structure, such as spans of control and stratification. Thompson employed the notion of technologically required interdependence to hypothesize three critical types of technology, each based on a different type of interdependence. These types of interdependence were pooled, sequential and reciprocal interdependence, defining, respectively, simple, mass and intensive technologies. Thompson's work was non-empirical, but it developed a compelling logic for the impact of technology on organizational design at the technical levels of the organization.

Lawrence and Lorsch (1967) built their theory on the idea of environmental uncertainty. Uncertainty was defined as the average of knowledge of cause/effect relations, clarity of information used in decision-making, and time span between when a decision is made and when the consequences of that decision are known. They argued that different levels of uncertainty among the various sub-environments facing the firm (market, technical and production) affected the organizational design of units within the organization dealing with each of these. Differences in uncertainty among these environments should result in differences among these designs, an outcome that they defined as differentiation. Deviations from these environmentally prescribed levels of differentiation were shown to affect firm performance empirically. Even more importantly, differentiation was shown to be antagonistic to achieving high levels of integration or coordination – only firms that were able to accomplish high levels of integration in the face of antagonistic differential emerged as high performers in their work. Lawrence and Lorsch's work was empirical, and provided important tests of the core propositions.

Perhaps the most important and integrative approach to organizational design was developed by Galbraith (1973) in a long and rich research stream that addressed complex organizations, matrix forms and global organizations. Hrebiniak and Joyce (1980) adapted the core concepts of Galbraith's work in the context of strategy implementation, as did Galbraith himself in his work with Nathanson (1978) and later with Kazanjian (1986).

The core concept of Galbraith's integrative work was the notion of information-processing need, and his approach has become known as the information-processing school of organizational design. Galbraith's work follows directly from earlier work on technology and environment as determinant of design, and argues that all the sources of contingency identified by earlier authors are important. He goes on to argue that organizations are created to solve problems and make decisions, and that they do this by processing information. If we can assess our information-processing needs stemming from these sources we can make an intelligent choice of organization design.

Galbraith's ideas have been tremendously influential because of their logical and integrative nature. Galbraith also developed an important taxonomy of the forms of lateral relations, along with criteria for their application. More than any other theory, Galbraith's perspective has been

widely used in applied organizational design throughout the world.

Organizational Design and Fit

The perspectives above make it clear that organizational design is concerned with manipulating elements of organization, thereby linking one or more contingency variables and the criterion variable of interest. Organizational design therefore mediates between these situational variables and the desired outcomes. It does so by creating a fit between the elements of organizational design and relevant contingency variables, as well as by establishing a fit among these key elements themselves. The consequence is that in order to achieve the desired fit, organizational designers must address three practical and theoretical problems, as follows.

First, we need to know what can be changed to affect the criterion of interest. What are the elements of organizational design that affect the criterion of interest, commonly some variant of organizational performance? What can be changed to produce the desired outcome?

Second, from among the set of variables identified in the first step, what should be changed? And how? Knowing what specifically affects performance does not mean that all these potentially efficacious variables necessarily need to be changed. Some may already be appropriately designed, and thereby require no further manipulation.

Third, in what order should these variables be manipulated? What sequence of changes should be followed? Should we change strategy first, then structure and then rewards? Or is it necessary to repair the structure before there is any possibility of creating a successful strategy? Let us consider each of these in turn.

Question One: What Can Be Changed? The Content of Organizational Design

A number of researchers have attempted to determine the content of organizational design, building upon the theoretical perspectives outlined above. Figure 1 presents three of the more prominent models which illustrate the major variables that are typically included as components of organizational design.

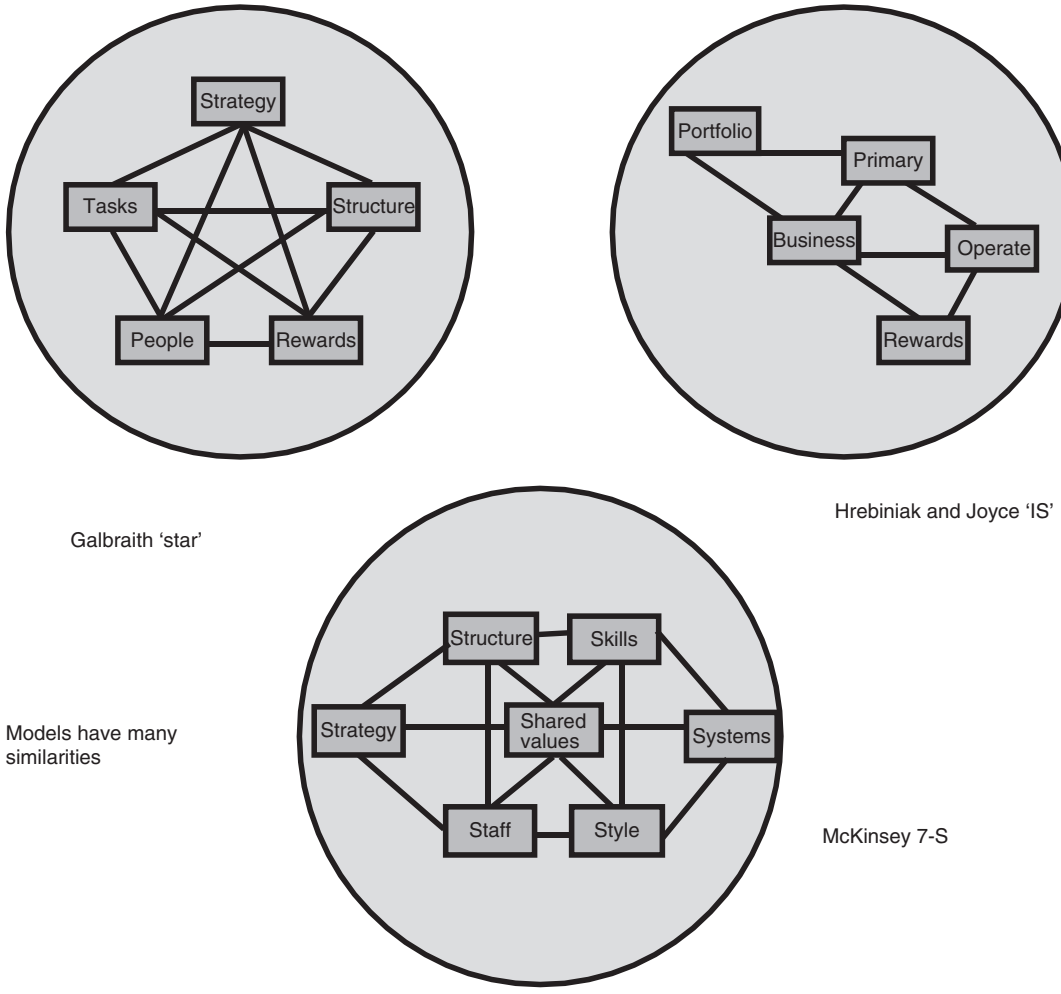
All the theoretical perspectives discussed above can be deconstructed and aligned with these three models, which are Galbraith's star model (1973), the McKinsey 7-S model and the Hrebiniak and Joyce (1980) strategy implementation model.

The first conclusion to be drawn is that there is substantial agreement among the models in terms of the content of organizational design. All of the models include strategy, structure and rewards as core components. There are also some differences. Hrebiniak and Joyce emphasize levels of strategy and structure, something neglected by the other models. The 7-S model highlights shared values or culture, something missing in the remaining two. Galbraith's model highlights core elements of design (structure and people), which are expanded upon in greater depth in the Hrebiniak and Joyce and McKinsey models; these were both developed after the publication of Galbraith's seminal perspective.

Including other models, such as those developed by Joyce et al. (1982), yields the same conclusions. Despite minor differences, there is agreement about the core elements of organizational design. Although much of this work has been theoretical, recent large-scale empirical research by Joyce et al. (2003) provides strong support for these conclusions.

Question Two: What Should Be Changed? Selecting Design Elements to Manipulate

Answering these questions raises a number of challenges. Achieving fit clearly involves substantial complexity as we consider multiple sources of contingency and a myriad of potential organizational choices to respond to them. Complicating this is the fact that we also generally face constraints of efficiency. The best choice is often the one that solves our problem at minimum cost, an idea which has been referred to as the principle of minimum intervention (Hrebiniak and Joyce 1980).



Organizational Design, Fig. 1 The content of organizational design

Fit is a critical aspect of addressing these two problems of complexity and efficiency. Complexity requires that we 'take apart' the complex set of activities involved in organizational design and work on them within the constraints of cognitive manageability. When something is taken apart the relationships between its components are unchanged; that is, they must still be fitted together to obtain the whole. Some pieces must fit with others, but every component does not have to fit with all others. Understanding the structure of these relationships, the fit, allows us to reconstruct the whole. Design models which argue that everything depends on everything else therefore imply one of two mutually absurd arguments: first, that we have taken apart the complex set of implementation activities but have learned nothing about the set of relationships among them, much like the careless person who disassembles his watch only to find that he can't put it together again; or second, that we have learned what the critical relationships among implementation variables are, and that they are adequately portrayed by models in which all elements depend on all others. Although this is possible, it is not very likely, for it would argue that causal direction is irrelevant, that no variables dominate others, that it makes no difference where we begin implementation activities and so on. We are left with the conclusion that complexity and fit are strongly connected.

A similar conclusion is reached with the problem of efficiency. Reverting to our previous example, when we take something apart to fix it, it is not usually the case that everything is broken: some parts may still be perfectly functional. This analogy implies that in organizational design everything does not always have to be changed. Efficiently addressing pertinent elements of the implementation model requires knowledge of functions and fit among its components.

In response to these challenges a number of efforts have been made to develop and refine the concept of fit. Schoonhoven (1981) and Drazin and Van de Ven (1985) provided valuable perspectives on the concept of fit, while Joyce et al. (1982) clarified alternative conceptions of fit in the organizational design literature, and developed statistical procedures for differentiating between them.

Question Three: In What Order Should the Design Elements Be Manipulated?

The final question of organizational design is the least illuminated by research. When step two is completed and the aspects of design to be changed have been identified we must still choose the sequencing of our change activities. Should all variables be manipulated at once, or should they be changed sequentially? What types of variables should be changed first? Should it be strategy, a popular view or some other variable?

Most organizational design sequencing decisions have been based more on managerial folklore than actual research: for example, 'begin where it hurts the most' or 'start where the process will succeed and build momentum'. These ideas have much in common with the principles of management, to the extent that they are not easily generalized and often in conflict. There have, however, been some promising answers to these questions, but none remain definitive.

Hrebiniak and Joyce (1980) employed the dual concepts of minimum intervention and localized search to present a process for sequencing change activities. Joyce presented a model of change sequencing that emphasized both top-down and bottom-up change, and argued that sequencing depended, at least in part, upon whether the changes in organization were transformational or merely transitional in nature. Joyce (2005), based upon large-scale empirical evidence drawn from 50 industries and 200 firms, showed that consistently high performing firms follow different implementation paths from low-performing firms, changing execution first, followed by strategy, structure and culture, in that order. Many questions remain, but progress is being made on this important issue.

Organizing for the Future

Most practice in organizational design is currently embedded in classical management practices. Although research has extended these classical ideas significantly through contingency theory, formal contingency approaches are typically used less than simpler classical or lay models that provide unsatisfactory answers to the three important design questions above. New forms of organization, still relying upon contingency notions, are currently emerging: they emphasize new conceptions of authority, collaboration and control. These will serve as the basis for continuing research in organizational design.

See Also

- ▶ Information and Knowledge
- ▶ Organization Theory
- ▶ Technological Change

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Organizational Ecology

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Abstract

Organizational ecology constitutes a theoretical perspective on populations of organizations; it relies on a common general conception of the organizational world shaped by processes of selection and also employs common methodological presumptions and practices. Systematic development and testing of ecological theory takes place within cumulative theory fragments that address specific research problems in coherent ways.

Definition Organizational ecology refers to a major theoretical perspective that attempts to explain the emergence, growth and decline of populations of organizations, relying mainly on an environmental selection model of change.

Organizational ecology refers to a major theoretical perspective that attempts to explain the emergence, growth and decline of populations of organizations. Populations are delineated by the relative homogeneity of member organizations.

Organizational ecology assumes a selection model of organizational evolution whereby change over time in a domain occurs through the replacement of some forms of organizations with other forms as environmental conditions shift. In selection imagery, the environment acts as a sieve that causes organizations less attuned to current conditions to falter in favour of better-attuned organizations. Selection assumes constraints on the adaptability of individual organizations and focuses attention on the vital rates of populations – rates of founding and mortality in particular, although growth and transformation are also of interest. Selection-driven evolution does not always imply a 'winnowing' of organizational diversity; this outcome becomes likely mainly when limits or constraints exist on new entry such as regulation or sunk investments.

Major Theory Fragments

Within organizational ecology, research programmes operate following so-called theory fragments, which are coherent 'partial theories stated as universal rules and formalized in predicate logic' (Hannan et al. 2007: 7). The fragments develop through the generation and testing of falsifiable predictions; they have resulted in cumulative knowledge in their domain areas.

The major theory fragments include:

Organizational forms. What are organizational forms and how do they delineate populations? Initial research highlighted the exchange patterns of organizations and environmental agents (Hannan and Freeman 1977; Barnett and Carroll 1987); current research focuses on social identities and their interpretations by contemporaneous agents – including customers, specialized intermediaries, activists and regulators – as the basis for emergence and endurance of forms (Ruef 2000; McKendrick et al. 2003; Hannan et al. 2007).

Categories and identities. Any organization is constrained by its identity, which is derived from membership of socially defined categories. This fragment addresses the ways in which categories guide and constrain organizational action, including how conformity to category models is rewarded more when category boundaries are sharp versus fuzzy (Bogaert et al. 2010) or category systems are institutionalized versus emergent (Ruef and Patterson 2009).

Structural inertia and change. This fragment examines the ability of organizations to make structural transformations that enhance competitive advantage. It identifies obstacles to organizational change and models their impact on organizational life chances. Change is generally difficult and deleterious, especially when characterized by opacity and asperity and prompting a cascade of other changes in the organization (Amburgey et al. 1993; Barron et al. 1994; Barnett and Carroll 1995; Hannan et al. 2003).

Age and size dependence. Research on age dependence examines how and why the age of organizations matters for their structures and life chances. Typical answers involve issues of knowledge, capabilities, bureaucratization and obsolescence. Conflicting empirical evidence has slowed progress (Sørensen and Stuart 2000; Pólos and Hannan 2002). Research on size dependence finds that large size conveys advantages in production costs and other factors such as favourable treatment from regulators. Scale-based positional gains can be a function of absolute size or size relative to competitors (Dobrev and Carroll 2003).

Density dependence. A prominent fragment, the core model assumes associations between density, the number of organizations in a population, and legitimation of the form of organization and competition among the population's members. Increasing initial density enhances the legitimation of a form and increases the capacity to mobilize resources by organizations; however, further increases in density generate intense diffuse competition for scarce resources. The main empirical expectations of the model consist of non-monotonic relationships between density and population vital rates, which have been largely confirmed in empirical studies (Carroll and Hannan 2000). Research also shows a robust positive effect of density at the time of founding on organizational mortality (Carroll and Hannan 1989).

Niche width. The niche describes an organization's adaptive capacity over the various possible states of its environment. Niche width concerns the span of environmental states in which an organization can operate successfully. According to niche width theories, a broad niche carries extra cost in a stable, competitive or institutional environment, but environmental uncertainty and variability affect the tradeoff between niche width and viability (Baum and Singh 1994; Dobrev et al. 2001; Hsu 2006; Negro et al. 2010).

Resource partitioning. This fragment concerns a variant of niche width theory using different assumptions and scope conditions. Resource partitioning predicts that, under competitive conditions characterized by scale advantages and heterogeneous consumer preferences, industry concentration releases resources at the periphery of the market that enhance the life chances of small specialist organizations operating therein (Carroll 1985). The partitioning of markets (environments) becomes an endogenous outcome of competition between generalist and specialist

organizations (Carroll and Swaminathan 2000; Boone et al. 2002; Greve et al. 2006).

Diversity of organizations. The level and structure of diversity among the types of organizations in a community affects competitive differentiation. Diversity also impacts the careers of individuals and broad social and economic outcomes by way of social matching (Sørensen and Sorenson 2007) or embedded relations in institutions (Koçak and Carroll 2008).

Empirical Research in Ecology

Empirical research in organizational ecology typically starts with the enumeration of all the member organizations that ever appeared in a population, including most notably those that failed. The most powerful research designs compile precise life-history data on member organizations (including timing information on founding, transformation and mortality as well as updated temporal data on covariates) that date back to the origins of the population. Analysis does not assume temporal equilibrium and often consists of estimating stochastic hazard rate models of vital events, linking organizational and environmental characteristics to the rates in a regression-like framework.

Strategic Management and Organizational Ecology

Organizational ecology initially encountered great resistance among strategic management analysts. This reaction was largely due to the assumption of organizational inertia, which denied strategy's raison d'être. However, Hannan and Freeman's (1977) programmatic statement of ecology invoked inertia as an analytical assumption, intended to foster development of theory about selection, rather than as a behavioural assumption about the way the world operates. Hannan and Freeman (1984) clarified this matter, laid out inertia as a research problem rather than an assumption and facilitated rapprochement, albeit sometimes grudgingly, between ecology and strategy.

Modern strategy research often displays certain core elements of early organizational ecology. Longitudinal population-based research designs have proliferated and comprise a central way to analyse strategic advantage; previous designs of representative samples of firms or lists of the largest firms in the economy are widely recognized as often too heterogeneous to test relcevant theories and as biased towards successful firms. Strategy analysts have also come to appreciate the difficulty and risk of major structural change, even if they remain more optimistic about its occurrence (Teece et al. 1997). Finally, theory fragments of ecology such as niche width and partitioning have become important elements of many strategy analysts' toolkits.

See Also

- ▶ Initial Conditions
- ▶ Sociology and Strategy

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Organizational Intelligence

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Abstract

In a behavioural science context, organizational intelligence refers to an organization's ability to acquire, process and use information. The organizational learning and organizational decision-making literatures comprise what would be the organizational intelligence literature if organizational intelligence were an acknowledged field of study. I describe these two literatures, and I show how organizational learning and decision-making facilitate organizational intelligence and are themselves enhanced by organizational intelligence. I also describe the practice of organizational intelligence, a practice that seeks to aid decision-makers by determining the nature, capabilities, circumstances and likely behaviours of entities of interest to these decision-makers.

Definition In a *behavioural science* context, organizational intelligence refers to an organization's ability to acquire, process and use information. In a *professional practice* context (*practice*, as in the practice of engineering or law), organizational intelligence refers to an organization's assessment of the nature, capabilities, circumstances and likely behaviours of an entity of interest – for use when making decisions regarding that entity.

In behavioural science discourse, organizational intelligence is an organizational property. By contrast, in everyday societal discourse, organizational intelligence is an organization's description of the nature, capabilities, circumstances and likely behaviours of an entity of interest.

Organizational Intelligence as an Organizational Property

An organization's intelligence is a function of the organization's ability to acquire, categorize, interpret, store, retrieve and use information in the pursuit of goals. Studies of these and related meso-level processes relevant to organizational intelligence appear in the literature in the context of three more macro processes: ► organizational learning, knowledge management and organizational ► decision-making. (Space limitations force knowledge management to be subsumed under organizational learning.) At present, organizational intelligence is not itself a field or area of scientific research but is rather a concept that encompasses these three processes and, thus, encompasses the meso-level processes just noted.

Organizational Intelligence and Organizational Learning

Organizational intelligence and organizational learning are mutually facilitative: (1) higher intelligence enables more effective information processing, which facilitates knowledge acquisition and other forms of learning, and (2) more contextual knowledge facilitates information processing, thus enhancing intelligence in that context. Intentional learning is the focal process in the lives of scientists, and of educators at all levels. Performance enhancement is a learning goal of all human systems. Small wonder, then, that organizational learning is commonly viewed as an intentional process directed at improving organizational performance and that performance improvement is regarded as the measure of learning. But this narrow view, as a description of what actually happens when organizations learn, is not defensible. Contrary to casual thinking, much of the information from which organizations (and/or the individuals involved) learn is acquired unconsciously, accidentally or otherwise unintentionally. Further, the information processing associated with learning is often ineffective: (1) information is often interpreted incorrectly due to cognitive limitations or motivational biases of individuals or to the Machiavellian or otherwise self-serving behaviour of participants in the collective interpretation process, and (2) acquired data are often inaccurate, distorted by intervening events, out of date or otherwise unrepresentative of the veridical information required for performance improvement. Therefore, 'Entities can incorrectly learn, and they can correctly learn that which is incorrect' (Huber 1991: 89). Thus, not all information possessing improves an entity's ability to correctly process information in the future; not all learning increases organizational intelligence. Further, learning need not be visibly performance enhancing or even behavioural; it may lay dormant. In particular, 'Learning may result in new and significant insights and awareness that dictate no behavioral change . . . The choice may be not to reconstruct behavior but, rather, to reconstruct cognitive maps or understandings' (Friedlander 1983: 194).

Organizational learning may involve the acquisition of hard facts, but it may also involve values, fears or other feelings or emotions. Such affective states are often the intended learning outcomes of those seeking organizational change, but affective states can also result from unintended processes. Consider as an interesting hypothetical example, adapted from March (1991), the organizational learning that might occur when unmanaged rapid personnel turnover results in a large change in the proportion of organizational members who possess values that are different from those of incumbent members. In such an instance, the newcomers are not likely to be socialized quickly. Instead, their values or norms might become institutionalized as culture within their sub-group or perhaps in the organization as a whole. In such an instance, the organization learns something, takes

on an affective property that it did not intend. This affective property might either increase or decrease the organization's ability to process information, that is, it might either increase or decrease the organization's intelligence.

All this having been said, and as subsequent material will elaborate, it is nevertheless a fact that the great preponderance of research and discussion about organizational learning concerns learning processes that are intentionally initiated and managed and that can lead to performance improvement. Important areas of research that have highlighted organizational information processing within the organization learning framework or which are related to organizational learning are absorptive capacity (Cohen and Levinthal 1990; Noblet et al. 2011), associations between learning at individual, group and organizational levels of analysis (Friedman 2001), data mining (Shmueli 2010; Han et al. 2012), environmental scanning (Garg et al. 2003), knowledge management (Alavi and Leidner 2001), ▶ organizational memory (Walsh and Ungson 1991) and quantitative modelling of organizational learning (Argote 1999). See also Dierkes and colleagues (2001), Starbuck and Whalen (2008).

Organizational Intelligence and Organizational Decision-Making

Organizational intelligence and organizational decision-making are mutually facilitative: (1) higher intelligence enables more effective information processing, which facilitates decision-making, and (2) decision-making creates categorizations, sensitivities, memories and routines that increase the effectiveness of subsequent information processing, thereby increasing intelligence.

Here, an organizational decision is a decision made ostensibly on behalf of an organization by an entity with the formal authority to make the decision. (Whether a decision made without formal authority, but congruent with organizational practice, such as a traffic warden's decision not to give a traffic ticket for a small infraction, is beyond the scope of our interest.) The individuals or groups with decision-making authority generally require information, resources, cooperation or support from other organizational entities, or from external entities such as regulators. The consequential power of these entities enables them, if they so wish, to influence the choices of the decision-makers. In some or many instances, cooperation and support mean that other organizational entities will not resist the decision or its implementation through political means. This multi-participant aspect gives added meaning to the concept of organizational decision-making. Although many organizational actions follow from routines (Nelson and Winter 1982), most strategic organizational actions are attributable to organizational decisions. Organizational actions, especially strategic actions, can greatly impact the well-being of stake-holders (employees, shareholders, alliance partners) and other entities in society (consumers, competitors, concerned citizens). Thus organizational decisions are of great interest to the public, the media and organizational scientists.

Because organizational rewards and continued organizational membership and stature are associated with a member's demonstrated pursuit of collective organizational goals (admitting to the pervasiveness of the non-collective goals of individual members), and because rewards and continued membership are generally sought by organizational members, most organizational decisions are directed (at least in part) towards achieving organizational goals. As a consequence, organizational decision-makers tend to attempt to use a rational approach, or attempt to portray their approach as rational. In keeping with this, economists, operations researchers and consultants have contributed a huge literature of formal approaches to rational decision-making. Intensive case studies of organizational decisions make it clear that path dependence, organizational routines, organizational politics, organization cultures and the difficulties associated with information processing in organizational learning noted above often interfere with or dominate intentionally rational processes (Allison 1971; Meyer 1982; Vaughan 1996).

Important areas of research that have highlighted intelligence and decision-making within the organizational decision-making framework are the effects of diversity in decision-making groups (Huber and Lewis 2010; Salas et al. 2012), comprehensiveness of decision analysis (Janis 1989; Miller 2008), data mining (Tuffery 2011), organizational information flows and organizational decision-making (Huber 1990; Christensen and Knudsen 2010), and organizational cognition (Walsh 1995; Narayanan et al. 2011). See also Hodgkinson and Starbuck (2008), Starbuck and Whalen (2008).

Organizational Intelligence as a Product

Organizational intelligence is an organizational product that describes the nature, capabilities, circumstances and likely behaviours of an entity of interest. The producers of organizational intelligence are often subordinate units of the organization that uses the intelligence, but are sometimes independent consultancies. The entities of interest can be other organizations, nations, individuals or aggregations of individuals such as consumers or members of movements. In many instances, producers of organizational intelligence are tasked with recommending actions to their client/parent organizations and evaluating the outcomes of client/parent actions or, if not assigned these tasks, nevertheless choose to initiate such recommendations and evaluations. 'At its most fundamental level, intelligence is about supporting decision makers to risk manage their operating environments' (Walsh 2011: 30).

Historically, national security and policing were the principal practice areas. Newer practice areas include the private sector (especially market analysis) and, in the public sector, health, customs and correctional institutions. Technological advances in explosives, poisons and disease contagion have facilitated acts or potential acts of terrorism, which has increased the proportion of intelligence activity focused on terrorism. Technological advances in data mining and modelling, geospatial imagery, electronic communications and information storage and retrieval have come to play major roles in the practices of intelligence producers. (Imagine, for example, how – in policing – information technology can facilitate crime pattern analysis, network analysis and criminal business profiles.) Capturing data in real time is a challenge in all practice areas. Information-sharing in the areas of national and international security and policing information, aside from the problem of inter-agency competition, is a huge logistics problem: in 2011 the USA had approximately 18,000 policing agencies (Walsh 2011: 17), any one of which might have unique information needed by another.

Because the details of practices in national security and policing organizations are minimally accessible, and because the terminology used in those fields is different from the terminology used in the organizational learning and decision-making literatures, it is difficult to know the extent to which such organizations explicitly draw on the knowledge contained in these behavioural science literatures. One would argue that they should (see the early concerns of sociologist Harold Wilensky 1967). Some work by the National Research Council suggests that, to some extent, these organizations do, on occasion, draw on behavioural science (Fischhoff and Chauvin 2011; NRC 2011). In contrast to national security and policing practices, business intelligence practice is a much more accessible subject – Jourdan et al. (2008) cite more than 150 articles in the academic research literature. It is clear from studies of business practice (Watson et al. 2006; Jourdan et al. 2008) that a sizable spectrum of methods from the fields of organizational learning and decision-making are used in business intelligence systems (Han et al. 2012).

See Also

- ▶ Behavioural Strategy
- ▶ Decision-Making
- ▶ Information and Knowledge
- ▶ Organizational Learning
- ▶ Organizational Memory

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Organizational Learning

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Abstract

This article discusses the concept of organizational learning – that is, the process by which an organization acquires knowledge through experience. The opening section gives a brief definition of the term. The article then goes on

to discuss learning by doing, in which an organization learns as a result of its own actions. It then goes on to discuss how the structure of an organization affects its ability to learn and its capacity both to transfer and to retain knowledge. After discussing the strategic implications of organizational learning, a final section considers possible areas for future research in this area.

Definition Organizational learning is the process by which an organization acquires knowledge as a result of its experiences. It is possible for an organization to acquire such knowledge either directly – through its own activities – or indirectly – through observing the actions of other units.

Since their earliest days, the concept of organizational learning has played a major role in the fields of organization theory and strategic management. Organizational learning was a key concept in Cyert and March's *A Behavioral Theory of the Firm* (1992) and also figures prominently in theories of the development of capabilities and competitive advantage.

The entry begins with a definition of organizational learning. We then discuss learning from one's own experience or learning by doing, and learning from the experience of others or knowledge transfer. We also discuss organizational forgetting or knowledge depreciation. We then provide a discussion of how organizational learning can enable the development of organizational capabilities which confer competitive advantage and enable organizations to sustain superior performance (Helfat et al. 2007). We conclude with a discussion of exciting new directions in research on organizational learning.

Defining Organizational Learning

Just as individuals can learn from experience, organizations can also learn from experience. Organizational learning is a change in the organization's knowledge that occurs as a function of experience (Fiol and Lyles 1985; Easterby-Smith et al. 2000). Organizations can learn directly from their own experience or indirectly from the experience of other units (Levitt and March 1988). The former is referred to as learning by doing while the latter is referred to as vicarious learning or knowledge transfer. The knowledge organizations acquire can be explicit, such as a scheduling algorithm, or it can be tacit and difficult to articulate, such as understandings about how to make innovative products. The knowledge the organization learns from experience can manifest itself in changes in cognitions of organization members, in the organization's routines or in characteristics of its performance such as speed or accuracy.

Although individuals are the media through which organizational learning generally occurs, the knowledge that individuals acquire must be embedded in a supra-individual repository for organizational learning to occur. The knowledge can be embedded in a variety of repositories (Walsh and Ungson 1991) including tools (Kogut and Zander 1992), routines, social networks and transactive memory systems. Once the knowledge is embedded in a supra-individual repository, the knowledge would evidence some persistence, even if turnover of individuals occurred.

Learning by Doing

Research on learning by doing or learning curves examines how characteristics of organizational performance such as defects or costs per unit of output change as a function of experience. The first published documentation of a learning curve at the organizational level of analysis was provided by Wright (1936), who observed that the amount of labour required to build an aircraft decreased at a decreasing rate as experience was gained in production. Since Wright's classic piece, researchers have documented learning curves in a variety of manufacturing industries such as shipbuilding and automotive assembly. These learning curves are the combination of a variety of factors, including individual workers, engineers and managers getting better at their particular jobs, improvements in the

organization's hardware and software, and enhancements in the layout and coordination of work (Argote 2013). An exciting recent trend in research on learning by doing is the examination of organizational learning in service organizations such as hospitals. For example, there is evidence that the time required to complete surgical procedures and their complication rates follow a learning curve.

Researchers have found significant variation in the rate at which organizations learn from their own experience (Dutton and Thomas 1984). This variation occurs even within the same firm. For example, firms producing the same product in different plants have been found to differ dramatically in the rate at which performance improves with experience. An exciting recent trend in the literature is analysing what explains the variation in organizational learning rates. Studies have shown, for example, that organizational learning is affected by whether the organization has a learning or a performing orientation, by the extent to which organizational members perceive that they are psychologically safe (Edmondson 1999), by whether members share a superordinate identity and by the distribution of power relationships within the organization.

Knowledge Transfer

Organizations also learn vicariously from other organizations (Miner and Mezias 1996) – a form of organizational learning that has been referred to as knowledge transfer. Mechanisms through which knowledge transfers from one organizational unit to another include personnel movement, social networks, routines, templates and inter-organizational relationships such as alliances or joint ventures.

Cognitive, motivational, emotional and structural factors have all been found to affect knowledge transfer (Argote and Miron-Spektor 2011). For example, knowledge transfer has been found to be greater across the units of a multi-unit organization such as a franchise or chain than across independent organizations (Darr et al. 1995). The process can also be affected by the similarity of the units involved in knowledge transfer. Units high in absorptive capacity (Szulanski 1996) and units that share a superordinate identity are also more likely to transfer knowledge effectively than counterparts that are low in absorptive capacity or shared identity. Weak ties facilitate the transfer of explicit knowledge while strong ties facilitate the transfer of tacit knowledge. Further, social cohesion and range facilitate knowledge transfer over and above the effect of tie strength.

An issue surrounding knowledge transfer that is especially important from a strategic perspective is how to speed up the internal transfer of knowledge while slowing down the spillover or external transfer of knowledge to competitors (Argote and Ingram 2000). This issue is challenging because several of the approaches that facilitate the internal transfer of knowledge, such as embedding it in tools, also facilitate the external transfer of knowledge to competitors. An approach that is effective in managing the tension is embedding knowledge in networks involving members, such as transactive memory systems (Wegner 1986; Ren and Argote 2011). Because these networks depend on the idiosyncrasies of individual members, such as their skills, the networks are hard to imitate and do not transfer readily across organizations. Further, due to socialization, selection and training, members are more similar within than between organizations. Thus, networks involving members transfer more readily within than between organizations.

Knowledge Retention

Research on knowledge retention examines the extent to which knowledge acquired through learning is cumulative and persists through time or decays. There is evidence that knowledge decays or depreciates in organizations and that the effect of depreciation varies across organizations (Darr et al. 1995; Benkard 2000). Turnover of individual members can contribute to knowledge depreciation, especially in organizations that do not rely on structures, processes and procedures. Turnover of employees who bridge structural holes in social networks is more harmful for

knowledge retention than the departure of employees in dense communication networks.

The introduction and appropriate use of information technology can reduce knowledge decay. Embedding knowledge in routines also minimizes knowledge decay. In addition, developing a transactive memory system or knowledge of who knows what minimizes knowledge decay and promotes knowledge retention. Because organization members know whom to ask for information, they have access to a much larger pool of information than they individually possess.

Strategic Implications of Organizational Learning

Organizational learning has important strategic implications in that it is one of the main routes to develop competitive advantage of firms (Teece et al. 1997). Competitive advantage of firms comes from capabilities (what a firm knows how to do) that are valuable, rare and hard to imitate (Barney 1991). Setting up the right learning processes that fit with a firm's strategy can enable the development of organizational capabilities. A firm can explicitly build formal work processes or routines for its employees to follow in order to create, transfer and retain knowledge. Moreover, because of the path-dependent nature of knowledge, firms acquiring the right knowledge today can distinguish themselves from competitors in the future.

The focus of organizational learning can vary. Extensive attention has focused on understanding the relative advantage of two different modes of organizational learning, exploration and exploitation (March 1991). Exploration includes the search for new possibilities, experimentation and risk-taking. For instance, an electronic firm positioning itself as an innovator may want to explicitly set up exploratory learning processes to collect novel ideas from consumer focus groups on a regular basis. Conversely, exploitation involves efficiency and refinement. For example, a firm focusing on exploitation might set up processes to identify and correct the causes of production defects. Firms tend to overemphasize exploitation even though balancing between exploitation and exploration is most beneficial.

New Directions of Organizational Learning Research

One emerging theme of organizational learning studies that is relevant for strategic management is incorporating diverse types of experience. Classic studies in organizational learning have focused on learning from operational experience (e.g., the cumulative number of units produced). Recognizing that any experience organizations face can be a source of learning, recent studies examine the impacts of various types of experience such as collaboration, contracting, foreign entry and rare events (Haunschild and Sullivan 2002) on organizational outcomes.

Developing the implications of organizational learning and knowledge transfer in entrepreneurial settings is also a promising direction of study. Currently, scholars have found that the experience from founding teams or parent companies positively affects the performance of new entrepreneurial firms. Research is needed to identify what is actually transferred and how the transferred knowledge helps entrepreneurial firms to be competitive.

Research on knowledge decay or depreciation suggests that a new start-up would not be at a competitive disadvantage if its recent experience is comparable to that of its rivals. When knowledge depreciates, recent experience is a more important predictor of current production than cumulative experience. Thus, as long as the start-up has recent experience levels comparable to its competitors, the start-up will not be disadvantaged by lower cumulative experience.

Another exciting new research stream pertains to how technology affects organizational learning. How knowledge is created, transferred and retained in organizations has already started to change. The implications of the changes, however, are not fully understood. In particular, research on how social media affect organizational learning is in its infancy. Companies are becoming more innovative in incorporating social

media to aid their businesses. Using the tools, companies build knowledge exchange networks and collaboration networks of their own employees as well as with their consumers. Utilizing online communities (e.g., Facebook, Twitter) as a marketing channel is one popular example. Leading-edge companies have started to create knowledge with consumers by setting up online ideation forums where consumers can collaborate to develop new products. Further research is needed to understand the implications of technology on organizational learning.

See Also

► Strategic Management of Knowledge

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Organizational Memory

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Abstract

Organizational memory is the knowledge that has been accumulated from past experiences, which resides in the organization and can be used towards making decisions. This article explicates some of the subtleties of organizational memory and explores its impact on organizations. By reviewing existing research on the understanding of antecedents and consequences of organizational memory, we suggest future research needs further clarification on

the antecedents of memory, the level in which memory occurs and the performance implications of memory. We also introduce the concept of 'global shared memory', which reflects recent advancements of knowledge storage beyond organizational boundaries.

Organizational memory is the knowledge that has been accumulated from past experiences, which resides in the organization and can be utilized towards making decisions (Walsh and Ungson 1991; Olivera 2000; Argote 2012). The temporal processes in organizational memory where information is acquired, interpreted and retained constitute a complex phenomenon that extends far beyond the mere collection and storage of information. Information has to be internalized as organizational knowledge, retained and be readily available for use. Consequently, not all information is retained by an organization. Actors select according to the importance of information and the availability of organizational capabilities required for retaining the information. Organizations also need specific storage and retrieval processes, so that they can easily access and present the information as useful knowledge at the specific moment that a decision is made.

Definition
Organizational memory is the knowledge that has been accumulated from past experiences, which resides in the organization and can be used towards making decisions. It is built through processes that facilitate information acquisition, integration, retention and retrieval. This cache of retained knowledge can prove valuable to organizational decision makers when drawing on past experience.

Organizational Forgetting

Organizational memory sometimes changes due to a changing task environment, new knowledge requirements or evolving organizational capabilities (Argote 2012); and thus while knowledge is often added, some older knowledge is lost. The process of organizational memory decay is called organizational forgetting (Argote and Epple 1990; Benkard 2000; Casey and Olivera 2011; David and Brachet 2011; Holan 2011).

Organizational forgetting occurs because knowledge is outdated (Benkard 2000), information processing and storage systems are imperfect (Meschi and Métais 2013) or the organization experiences a structural reorganization or significant employee turnover (David and Brachet 2011). Consequentially, memory maintenance is important to keep the memory updated (Stein 1995).

Antecedents of Memory: Levels of Organizational Memory

Since the foundational work of Nelson and Winter (1982) and Walsh and Ungson (1991), we have begun to understand that memory has different mechanisms and can exist at different places in the organization, such as at the individual, group and organizational levels.

Individual memory within organizations consists of declarative and procedural memory (Cohen 1991; Moorman and Miner 1998; Miller et al. 2012). Declarative memory is the storage of 'know-what', such as past organizational facts, knowledge and events. Procedural memory is the storage of 'know-how', and it is akin to skills and routines that can be automatically retrieved. Procedural memory is useful for improvising with specific tasks because of its rapid nature, whereas declarative memory is more useful for facilitating richer and complex solutions as it slows down decisions (Cohen 1991; Moorman and Miner 1998).

Group-level processes, such as transactive memory (Wegner 1987; Ren et al. 2006; Argote and Ren 2012; Argote 2015), are also important for organizational memory. Transactive memory is the storage of 'know-who' (Miller et al. 2012), and is the knowledge that resides within a group of individuals. Transactive memory decreases the response time of knowledge retrieval and improves decision-making (Ren et al. 2006). The benefits accrue because it allows for knowledge

specialization, builds trust between actors and improves task coordination (Argote and Ren 2012). Transactive memory is facilitated by having access to others who possess similar knowledge, being within smaller groups and having frequent interactions with these actors in order to be able to recall this knowledge.

Organizational-level processes also facilitate organizational memory. organizational routines are tied to memory (Cohen and Bacdayan 1994; Miller et al. 2012). Over time, the repetition of successful routines strengthens organizational memory and reduces the need for search. Organizational narratives and identity help memory (Garud et al. 2011; Schultz and Hernes 2013) as these processes allow organizations to sensemake unusual experiences and retain this knowledge in a meaningful way. For example, Schulz and Hernes' (2013) study of the LEGO Company found that the evoking of different organizational memory forms influenced the scope of future identity claims.

The antecedents of organizational memory require further research, such as investigating other antecedents. For example, the role of top management teams and governance in ensuring adequate information systems and databases, and the effect of socially undesirable actions on organizational memory may prove to be fruitful avenues of research.

Consequences of Memory: the Effects of Organizational Memory on Performance

There is still no consensus on whether memory improves organizational performance. Empirical evidence has shown that transactive memory is useful for making informed decisions in a timely manner (Ren et al. 2006), but we have not found any articles with direct links between *organizational* memory and performance. While it seems likely that there should be a positive link, a body of theoretical work suggests otherwise. Organizational memory is often associated with increased inertia that prevents the organization from adapting to new information (Walsh and Ungson 1991). Automatic retrieval of a decision response when a non-routine response is necessary can lead to superstitious acts (Walsh and Ungson 1991; Moorman and Miner 1998).

Moreover, managers often have significant latitude in selecting tools for organizational memory. These situations force managers to discriminate and decide which experiences are worthy of recording into repositories of knowledge (Cross and Baird 2000; Casey and Olivera 2011). Managers are unlikely to be able to select the appropriate memory-enhancing tools as actors are cognitively and politically limited within organizations (Cyert and March 1963) and memory-enhancing tools are often uncertain, context-dependent (Ackerman 1996) and costly in the near term (e.g., requiring the management of databases and information technology).

Empirical Techniques to Study Organizational Memory

Early research on organizational memory mainly relied on qualitative evidence. For example, Ackerman's (1996) case studies of organizational memory systems at six organizations showed that the idealized view of organizational memory and actual organizational memory differed as organizations face technical limitations of storage and retrieval. Similarly, Olivera's (2000) field studies of six offices of a multinational business consulting firm showed that several memory systems utilized within the organization included overlapping systems of social networks, knowledge centres and computer-based information systems. Qualitative research from the past 5 years (Garud et al. 2011; Schultz and Hernes 2013) use observational study and interviews to show that managers use narratives and oral forms of memory to understand both experiences and the organization's identity.

More recent research tends to rely on quantitative techniques. Surveys are common. For example, Flores and colleagues (2012) used a self-reported survey instrument to measure organizational memory and Heavey and Simsek (2016) administered a survey instrument of transactive memory system on top management teams. In

other survey research, researchers have found that memory can play a positive role in improving organizational innovation (Chang and Cho 2008; Camisón and Villar-López 2011). Direct analysis of organizational memory using secondary data is common for research on forgetting, but explicit analysis of memory is more limited: we found only one article. Meschi and Métais's (2013) survival analysis of acquisitions data found that organizational memory deteriorates over time because of inefficient coding of information, information decay and disuse.

Recently, simulations have begun to increase in popularity. For example, Levine and Prietula (2012) used simulations to show that fit between organizational memory and knowledge transfer aids memory and performance. Miller et al. (2012) found that procedural, declarative and transactive memory are all equally important to the ostensive aspect of organizational routines. Similarly, Jain and Kogut (2013) found that memory enables efficient development of organizational capabilities and consequently facilitates organizational evolvability and innovation.

Conclusions and Future Research

The organizational landscape has changed drastically since the original Walsh and Ungson (1991) article was published. With the widespread use of internet and cloud-based storage, organizational memory is no longer contained only within the confines of the organization. The bulk of it, at least that has been codified, exists within what we label as 'global shared memory', accessible by anyone, anywhere, over the Internet. This is not to suggest that local organizational memory is not important, however, and this is demonstrated by the fact that many organizations go to great lengths to ensure the integrity of their memory by restricting access to critical private information. New research should look into how global shared memory has affected organizational memory in terms of acquisition, retention and retrieval. Researchers could investigate how organizations decide what memory to retain internally versus what to store in the global shared memory.

There is still a need for more in-depth empirical studies. Past studies have primarily used survey, narratives or simulation data to measure organizational memory. Other sources of data (e.g., archival data) would strengthen the empirical findings on organizational memory. There is also the need for multilevel studies that connect individual, group (e.g., transactive memory) and organizational memory. Equally important is to understand the role of knowledge management where individual, group and external information is brought together in a timely manner (Anand et al. 1998).

Research is still inconclusive on what organizational factors affect memory. What effect does the size, structure and type of the organization have on memory? Investigating the antecedents and moderators of organizational memory would shed light on this issue. Similarly, confusion still exists on the role of organizational memory on performance, and more in-depth studies are necessary to clarify this relationship. The important relationship between organizational memory and organizational learning has been discussed repeatedly in the literature (Argote and Miron-Spektor 2011; Casey and Olivera 2011; Flores et al. 2012). Further research that explains when memory is conducive to learning versus when it is not can help identify the effectiveness of memory on learning.

See Also

Organizational Learning
Organizational Routines

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Organizational Restructuring

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Abstract

This entry defines the construct 'organizational restructuring', reviews recent literature on organizational, financial and portfolio restructuring, and discusses directions for future research on restructuring.

Definition Organizational restructuring can be defined as any major reconfiguration of internal administrative structure that is associated with an intentional management change programme.

Organizational restructuring can be defined as 'any major reconfiguration of internal administrative structure that is associated with an intentional management change program' (McKinley and Scherer 2000: 736). Organizational restructuring includes such administrative changes as revised work procedures, reduction of the number of layers in the managerial hierarchy (delayering) and intentional workforce reduction (downsizing). The definition of organizational restructuring provided here distinguishes the term from two other related forms of restructuring: financial restructuring and portfolio restructuring. Financial restructuring refers to modifications in the financial composition of an organization, including share buybacks, increase of financial leverage and reduction of free cash flow (Bowman and Singh 1993; Gibbs 1993). Portfolio restructuring, on the other hand, refers to changes in a corporation's business portfolio, for example the sale of businesses, the reduction of diversification and downscoping (Bethel and Liebeskind 1993; Bowman and Singh 1993; Hoskisson and Hitt 1994). In summary, organizational restructuring focuses more closely on internal routines for getting work done than the other two varieties, and therefore it is of particular significance to middle managers and lower-level employees.

Literature Review

Early literature on organizational, financial and portfolio restructuring focused on the determinants of restructuring, often taking an ▶ agency theory perspective (Jensen and Meckling 1976). Briefly, agency theory describes executives as the agents of shareholders, arguing that executives have a duty to advance the interests of shareholders before their own interests. Agency theorists point out that agency costs sometimes enter the relationship between agents and shareholders, and therefore managers do not adequately fulfil their responsibilities to prioritize shareholder interests (Jensen and Meckling 1976; Jensen 1986). Managers may act to further their personal goals by expanding the size of their firms, diversifying beyond the point where profits are maximized and tolerating inefficiencies such as free cash flow. Free cash flow and the other managerial 'excesses' referred to thus create a need for restructuring, which can involve de-diversifying, borrowing money (taking on leverage) to finance share buybacks and downsizing the workforce (Bethel and Liebeskind 1993; Gibbs 1993; Johnson et al. 1993).

Working within the agency theory framework, empirical researchers such as Bethel and Liebeskind (1993) examined the effects of blockholder ownership (ownership by major investors and financial institutions) on portfolio and organizational restructuring. They found that the larger the percentage of a company's shares owned by blockholders, the more likely the company was to restructure by divesting assets, downsizing and increasing payouts to shareholders. The implication of their findings was that the power of large blockholders forces these actions on managers. Johnson et al. (1993) studied involvement by boards of directors in restructuring, concluding that board-of-director involvement was increased by a higher percentage of outside directors on the board, as well as outside director equity ownership. An implication of these results is that there is a power struggle between management and outside directors to control restructuring and its consequences – a contest that would be consistent with the general thrust of agency theory. Gibbs (1993) tested the free cash flow hypothesis of agency theory by using measures of portfolio and financial restructuring, claiming support for the argument that free cash flow is a stimulus for profit-inducing changes in corporate business portfolios and corporate financial structure.

While early research on restructuring typically spanned the three dimensions of organizational, portfolio and financial restructuring, more recent research has been more focused on organizational restructuring, and has moved away from the agency theory perspective. Embracing a cognitive approach, McKinley and Scherer (2000) concentrated on the unanticipated consequences of organizational restructuring. Unanticipated consequences are outcomes that are not forecasted

by managers, and McKinley and Scherer (2000) argued in a theoretical paper that such unanticipated consequences are both cognitive and environmental in nature. One set of unanticipated consequences is a combination of cognitive order among the top executives who order restructuring, and cognitive disorder among the middle managers who must implement it. This internal bifurcation between realms of cognitive order and cognitive disorder splits the organization, making communication between the top ranks and the rest of the organization difficult. At the same time, internal restructuring, which is begun by top managers in response to perceptions of environmental turbulence, feeds back to enhance future perceived environmental turbulence. This magnifies the reinforcing effects of cognitive order to create multiple, self-reinforcing feedback loops, impelling more restructuring. In short, McKinley and Scherer (2000) concluded that unanticipated consequences of past organizational restructuring are causes of additional restructuring in the future.

Balogun and Johnson (2004) reported a case study of organizational restructuring in an electric utility, and provided evidence of the same cognitive bifurcation to which McKinley and Scherer (2000) referred. While senior managers at the executive level provided a broad framework for the restructuring, middle managers were left to sort out the messy details of how relations between units of the utility would be rearranged under the new regime. The result was considerable ambiguity and confusion, until middle managers had evolved new schemata that made the restructured organization sensible to them.

In another investigation of restructuring's organizational and cognitive consequences, Luscher and Lewis (2008) reported an action research project during a restructuring at Lego Corporation. This restructuring also raised fundamental questions about middle manager roles and interpretations. In the tradition of action research, the researchers not only observed these issues but became part of the phenomena they were observing by trying to help the middle managers sort them out. Taken together, the theoretical work by McKinley and Scherer (2000), and the empirical work by Balogun and Johnson (2004) and Luscher and Lewis (2008), emphasize the confusion created by organizational restructuring, at least at middle and lower ranks, and provide insights into how managers at these levels re-establish order by imposing new schemata on the situations they face.

The Effect of Organizational Restructuring on Organizational Performance

A major controversy in the organizational restructuring literature involves the question of whether or not organizational restructuring improves organizational performance. The empirical researchers guided by agency theory, whose work was reviewed above, took it for granted that restructuring enhanced the financial performance of a company, since they believed that restructuring enhanced efficiency and reduced free cash flow. For scholars in this tradition, restructuring is a rational, reliable management technique for improving profitability and shareholder value. This benign assessment of restructuring's performance benefits also has been shared by some organizational scholars who do not approach the subject from an agency theory perspective. For example, Zajac and Kraatz (1993) found that organizational restructuring through programme addition in small, liberal arts colleges enhanced enrollments and operating margins, helping the colleges to survive the turbulent environments they faced. In a later study, Kraatz and Zajac (1996) confirmed the beneficial effects of restructuring in liberal arts colleges, showing that ▶ organizational changes in these colleges reduced the probability of future organizational decline. Further, Haveman (1992) reported that the restructuring of savings and loan banks in response to change in these institutions' technical and competitive environments improved financial performance.

Other organizational scholars have been more sceptical about the benefits of organizational restructuring. For example, Hannan and Freeman (1984) argued that major organizational change is

disruptive to the reliability and accountability of organizations, and since environments select on the basis of reliability and accountability, attempts at restructuring enhance the likelihood of organizational collapse. Fundamental changes in administrative structures and core processes may be beneficial once implemented, but the process of implementation is risky, and the organization incurs inflated chances of negative selection while the process is ongoing. Amburgey et al. (1993) showed that changes in the content and the frequency of publication of Finnish newspapers enhanced their short-term likelihood of failure. Finally, the large literature on the performance effects of organizational downsizing suggests that downsizing during organizational restructuring will have null or negative effects on innovation and profitability (see, for example, Mentzer 1996; Chadwick et al. 2004; Krishnan et al. 2007; Guthrie and Datta 2008). And a meta-analysis (Capelle-Blancard and Couderc 2007) of studies linking layoff announcements with market-adjusted shareholder returns suggests that, contrary to Wall Street myth, layoff announcements are generally followed by reductions of shareholder wealth.

Directions for Future Research

Although organizational restructuring and its dimensions have already been the subjects of considerable empirical research, there are still outstanding questions that could stimulate interesting future investigations. One important research topic would be to elaborate the ongoing attempts to assess the performance consequences of organizational restructuring, both as it is manifested in downsizing, and also as it is exhibited in other activities, such as administrative structure change and delayering. It is still not clear whether organizational restructuring delivers net gains or losses in financial performance to the executives who initiate the restructurings. An important addition to empirical research on this subject would be an integrative theory specifying the conditions under which different components of organizational restructuring will enhance organizational performance, and the conditions under which those same components will reduce performance. In addition to clarifying the organizational restructuring–performance relationship, such a theory might provide valuable guidelines to executives in deciding when to initiate organizational restructuring and when to refrain from it.

Second, future theorists and empirical researchers might further investigate the cognitive outcomes of organizational restructuring that were the focus of interest for scholars such as McKinley and Scherer (2000), Balogun and Johnson (2004), and Luscher and Lewis (2008). The work of these scholars suggests middle management confusion during the process of organizational restructuring, and this cognitive disorder may help account for some of the negative organizational restructuring–performance findings cited above. We need further research on the cognitive disruptions engendered by organizational restructuring, and the processes through which managers and employees come to consensus on new schemata that navigate those disruptions and restore cognitive order. In addition, theories and empirical research seeking to delineate the conditions under which organizational restructuring enhances or reduces cognitive disorder would be beneficial to organizational scholarship and to practice.

Last but not least, organizational restructuring might be investigated as a source of knowledge diffusion among organizations. When organizations restructure their internal administrative hierarchies and work procedures, considerable employee turnover sometimes occurs. This may involve exits of employees through layoffs (Freeman and Cameron 1993), but also often results in the hiring of new employees. Since employees are the carriers of tacit and explicit knowledge (Nonaka and Takeuchi 1995), organizational restructuring may diffuse knowledge beyond the boundaries of single organizations while simultaneously importing new knowledge into those same organizations. This process may have both costs and benefits for a focal organization and the environment in which it resides. Investigating this knowledge diffusion more closely could lead to a better understanding of

inter-organizational knowledge flows and the role of organizational restructuring in instigating those flows.

See Also

- ▶ Agency Problems
- ▶ Agency Theory
- ▶ Business Process Re-engineering
- ▶ Organizational Change
- ▶ Organizational Design

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Organizational Routines

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Abstract

The concept of organizational routines provides a perspective on organizations that focuses on how actors jointly accomplish interdependent tasks in stable ways. Because accomplishing an organization's tasks generates the organization's performance, organizational

routines are immediate drivers of the performance of organizations. As organizational routines also foster stable behaviour over time, they can also provide a source of sustained performance differentials between organizations.

Definition Organizational routines are organizational dispositions to energize conditional patterns of behaviour within organizations, involving sequential responses to cues that are partly dependent on social positions in the organization (Hodgson and Knudsen 2010: 140).

The Routines Perspective on Organizations

The concept of organizational routines originated from the observation that a large part of the work carried out in organizations is accomplished in routinized ways and that routines are ubiquitous in organizations (March and Simon 1958; Cyert and March 1963). Nelson and Winter (1982) have brought the concept of organizational routines to broad attention in the management literature.

Organizational routines refer to actors jointly accomplishing interdependent tasks in stable ways. The tasks organizational routines refer to are, therefore, tasks that require collective action (the term 'habits' is used for the individual level: Dosi et al. 2000). Interdependent tasks pose coordination and cooperation challenges in combining individual inputs to create value and generate performance. Organizational routines therefore provide a perspective on organizations that focuses directly on the essential challenges of organization. At the same time, the concept of organizational routines also focuses on an important empirical signature of organizations; that is, the persistence of particular ways of accomplishing interdependent tasks once they have been adopted (Winter 1971; Nelson and Winter 1982).

The Concept of Organizational Routines

In descriptions and explanations of how and why agents jointly accomplish interdependent tasks in stable ways, three concepts are invoked in the literature.

Recurrent action patterns, by which actors jointly accomplish interdependent tasks in stable ways, *describe* behaviour (Pentland 2003a, b). Describing behaviour allows identification of the causes of (high or low) performance. It does not, obviously, reveal any of the causes of that behaviour. Extant literature has identified two different types of cause that generate stable behaviour by which actors jointly accomplish interdependent tasks: rules and dispositions.

Rules guide behaviour in organizations, contributing to stable behaviour patterns under certain conditions. In organizations, *standard operating procedures* are a particular salient form of rules that guide the behaviour of organizational members (Cyert and March 1963; March et al. 2000). Rules refer to institutionalized prescriptions of how tasks are supposed to be accomplished. Such prescriptions take the form of if-then relations that link situations to action. Such if-then relations can be embedded on different levels, and in different forms. For instance, they can be codified or non-codified; they can be more or less specific; they can be sanctioned or not; their compliance can be monitored or not. The feature of providing actors with if-then rules that link situations to actions is common to institutions in different forms and on different levels. Standard operating procedures (and rules more generally) thus capture organizational-level causes of stable behaviour patterns.

Dispositions to engage in previously adopted or acquired behaviour, triggered by an appropriate stimulus or context (Hodgson and Knudsen 2004a, b, 2010; Cohen 2007) are the second cause identified in the literature on organizational routines that can generate stable behaviour. Organizational routines are 'organizational dispositions to energize conditional patterns of behaviour within organizations, involving sequential responses to cues that are partly dependent on social positions in the organization' (Hodgson and Knudsen 2010: 140).

Dispositions also guide behaviour by linking actions to situations, just like rules. Dispositions refer to propensities or proclivities to behave in a

particular way in a particular situation. They differ from rules regarding where and how they are encoded. Dispositions are ingrained in procedural memory (Cohen 2007) (rather than in artefacts, such as standard operating procedures). Dispositions thus can generate action without a spelled-out version of the if-then relations, the necessity of normative power, monitoring by some higher-level institution or deliberation and attention. Moreover, dispositions also generate stable collective behaviour in a different way from rules: dispositions capture an *endogenous* mechanism that explains the stability of individual behaviour. In the psychology literature, habits are characterized as behavioural dispositions to repeat well-practised actions given recurring circumstances (Ouellette and Wood 1998; Wood et al. 2005: 918). Repeated action creates if-then links between actions and cues such as times, places and people that are typically present during performance (Wood et al. 2005). When they emerge through repeated action, behavioural dispositions also capture a habituation effect – that is, a behavioural response decrement that results from repeated stimulation (and that does not involve fatigue) (Rankin et al. 2009). In other words, with increased repetition of an action, actors filter out (or discount) some cues in the situation and focus selectively on some other cues (Rankin et al. 2009). This can explain why actors driven by dispositions evoke a particular action at a particular cue more often than they would if their behaviour were not driven by dispositions (but rather, by assessing the possible actions by their expected payoffs). This provides an endogenous explanation of why dispositions change only slowly (rather than adapting rapidly to new cues and new information), even in the face of new cues or changed payoff structures.

As Hodgson and Knudsen (2010: 140–141) write, organizational dispositions can be 'broken down into linked individual dispositions, i.e., each individual actor has dispositions that are triggered by cues from other individual actors'. Structural conditions such as organization design therefore influence how stable individual action is combined into stable collective action. For understanding the emergence of organizational routines, the disposition perspective therefore points to processes that are active when (1) individuals repeat actions in response to contextual cues, and (2) factors such as organization structure combine individual into collective action, so that (3) several individuals repeatedly engage in joint action in response to contextual cues.

Applying the Concept

These three perspectives fit neatly into an overall conception of organizational routines. The organizational routines perspective provides a concept for describing stable behaviour (recurrent interaction patterns), and two different potential causes of the stability of such behaviour (standard operating procedures and dispositions). This is what the term 'organizational routines' contributes: it introduces the three concepts described above in a framework that links them together. Scholars interested in the behaviour of organizations, organizational change and organizational performance therefore have a choice of three specific concepts (which the term 'organizational routines' offers) that can be applied to a particular research question.

Recurrent interaction patterns are particularly helpful for research questions involving the *behaviour of organizations* and its *performance implications*, including sustained performance differentials. They provide a parsimonious way of describing the behaviour of the organization: describing *one* recurrent interaction pattern for accomplishing a task, which is repeated often when that task is carried out, captures a large proportion of the behaviour by which a particular task is accomplished and how that task is *usually* accomplished in that organization. Describing behaviour allows identification of the causes of particular (positive or negative) performance and, thus, of performance differentials.

For any question concerning the *causes* of the behaviour of organizations, recurrent interaction patterns are not the appropriate unit of analysis. Extant literature has identified two classes of

causes: rules and dispositions. Rules and dispositions are therefore useful units of analysis for research questions that involve the causes of stable behaviour patterns and their persistence.

Contributions of the Organizational Routines Perspective

Scholars have long argued that organizational routines help us to understand the behaviour of organizations, organizational change and organizational performance (Cyert and March 1963; Nelson and Winter 1982; Feldman and Pentland 2003).

Organizational routines contribute to the understanding of the behaviour of organizations by capturing stable patterns of collective action that emerge from the interrelating of individual action. They are the most micro collective-level building blocks of behaviour in organizations (and of organizational competencies or capabilities: Dosi et al. 2000). Such a description of the most micro collective-level building blocks allows asking how stable collective-level behaviour patterns emerge and remain stable over time. By representing the most micro collective-level building blocks of behaviour in organizations, the concept of organizational routines bridges the individual level with the group level. It also bridges economic, sociological and psychological approaches to analysing how individuals in organizations create value by accomplishing tasks. This helps combine knowledge of individual-level motivation and incentives with our knowledge of (small) group dynamics and of organizations as environments for collective action.

Organizational routines also foster understanding of organizational change and stability. They capture sources of organizational-level path dependence and stability over time. More surprisingly, however, organizational routines can also encompass sources of (endogenous) change (Feldman 2000). Recent research sheds light on how organizational routines can also contribute to, rather than just hinder, organizational change (Pentland et al. 2011).

Organizational routines have important performance consequences. Because accomplishing an organization's tasks generates the organization's performance, organizational routines have immediate consequences for performance. Because much of the performance of organizations is generated in collective action, organizational routines potentially cover an important part of organizational performance. Because many collective tasks are characterized by interdependence that can have a huge impact on performance, organizational routines can potentially cast light on important performance differences. Because organizational routines also exhibit path dependence and stability over time in how actors jointly accomplish interdependent tasks, organizational routines can also help us to understand sources of sustained performance differentials between organizations.

In offering these three concepts linked in a perspective on the behaviour of organizations that focuses on the stability of such behaviour, the concept of organizational routines also offers a treatment of the relation between knowledge (such as experience stored in rules and dispositions) and behaviour. Such a treatment also helps us address questions such as: What determines the stability of routines? What is the role of combination for explaining the stability of routines, and for explaining performance? How exactly do routines combine? How exactly do routines map onto performance? How can work on routines inform theories of coordination? All these questions are very significant for organization and strategy theory, and we currently know very little about them.

See Also

- ▶ Behavioural Strategy
- ▶ Bounded Rationality
- ▶ Bureaucracy
- ▶ Decision-Making
- ▶ Dynamic Capabilities
- ▶ Organization Theory
- ▶ Winter, Sidney G. (Born 1935)

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Outsourcing

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Abstract

Outsourcing, the use of an external supplier for any value chain function, can bring advantages, such as cost savings or access to specialized know-how. It can also cause problems such as a loss of control over the function's quality. Over time, more and more activities of the enterprise have proved amenable to being outsourced effectively. The spread of economic development has enhanced markets for intermediate and this has enabled greater outsourcing. Academic and popular views of outsourcing have shifted back and forth between embracing the benefits while worrying about industrial decline in the home country.

Definition Outsourcing occurs whenever a company relies on a contractual relationship with an external supplier for all or a part of its value chain activities. The supplier may be located in either the same or a different country.

Outsourcing occurs whenever a company relies on a contractual relationship with an external supplier for all or some part of its value chain activities. It is the 'buy' branch of the ▶ make-or-buy decision. The 'buy' option is attractive in cases where the company is purchasing relatively small quantities in a product market with numerous, competing suppliers. But the choice quickly becomes complex in cases where suppliers exercise some amount of market control either because of their size or because the supply relationship involves ▶ co-specialization between the firms. Other considerations in choosing whether to outsource all or part of a function include the strategic value and technological complexity of the activities to be outsourced.

The external procurement of intermediate inputs is one form of outsourcing and is usually what researchers have in mind when using trade or other large data sets (e.g., Schwörer 2013). Outsourcing is conflated in some analyses with offshoring, which may be done either by an offshore subsidiary or by an external firm ('offshore outsourcing').

Outsourcing is often driven by a desire to reduce costs and minimize capital outlays. A specialist supplier may be able to offer attractive terms to a purchaser because they benefit from lower wages, greater economies of scale or more agility than the internal unit of a large purchaser.

When the outsourcing decision is made correctly, it may or may not bring cost savings. There are, however, other advantages that can be gained. These include allowing the company to focus on the activities in the value chain where its greatest advantage lies, accessing otherwise unavailable specialized knowledge or other assets of the supplier, securing the flexibility to scale rapidly up or down in response to changes in demand, and reducing the time it takes to bring a new product to market.

However, outsourcing usually involves 'hidden costs' that are often ignored in the analysis supporting the initial decision (Larsen et al. 2013). Such costs include the time and expense of searching for and contracting with a vendor and then the ongoing overhead required for vendor management (Barthelemy 2003). Depending on the level of sophistication and complexity of the technologies involved, knowledge may also need to be transferred, a process that is more costly between separate firms than between units of a single firm (Teece 1976). The client firm may also need to develop effective coordination mechanisms (Srikanth and Puranam 2011). These could include the need for executives and engineers to travel repeatedly back and forth between vendor and client.

In short, outsourcing can bring advantages; but, if mishandled, it can bring difficulties such as a loss of control over product quality, slower responsiveness to customer problems, a decline in employee morale, the sacrifice of learning opportunities and a loss of control over intellectual property and technology roadmaps.

The Practice of Outsourcing

Outsourcing has been practised differently in different economies. For example, large Japanese manufacturers in the post-war period developed a system that relied extensively on Japan-based external suppliers, whereas US firms leaned towards vertical integration, with supplies sourced from subsidiaries at home and abroad.

During the 1980s, an increasing number of US firms began contracting domestically for business services, including unskilled (e.g., janitorial and security) and higher skilled (e.g., accounting and engineering) activities. These developments were far from universal among firms (Abraham and Taylor 1996).

Some US manufacturers also engaged in offshore outsourcing to low-wage economies as a cost control measure to improve competitiveness during the period of the strong dollar that persisted until the 1985 Plaza Accord. Declines in the cost of computing and communications facilitated long-distance collaboration with suppliers and other elements of the innovation ecosystem (Teece 1989).

Globally dispersed outsourcing arrangements in the manufacturing sector have been studied under several names, including 'international production networks' (e.g., Ernst and Guerrieri 1998), 'global value chains' (e.g., Gereffi et al. 2005) and 'global factory' (Buckley 2009). They are typically orchestrated by a lead firm based in the US, Europe or Japan and may involve one or more of its overseas subsidiaries. The lead firm generally owns some combination of brand, design and distribution resources that give it the ability to capture value, sometimes the largest value share of any participant in the network (Dedrick et al. 2010).

The outsourcing movement became such a significant trend that the popular press in the US and UK has bemoaned the erosion of the home country manufacturing base (Jonas 1986). By the time some scholars associated the outsourcing wave with 'industrial decline' (Bettis et al. 1992), the

popular press turned to a more optimistic view of 'the virtual corporation', limited to a headquarters function that oversees a network of outsourcing and strategic alliances (Byrne 1993).

Stephen Hymer identified as early as 1972 the potential for firms to focus on investing in intangible assets, such as brand image or design excellence, and to outsource all productive activity (Pitelis 2002; Strange and Newton 2006). In the following decades, the global pool of potential contractors became wider and deeper even as the downsides of conducting business across great distances diminished. Today, Apple is the leading example of a company that owns no factories yet controls the manufacture of billions of dollars worth of computer and telephony hardware through a tightly coordinated supply chain.

The 1990s also saw outsourcing expand beyond manufacturing into information services (Dossani and Kenney 2007). The outsourcing of business services dates back to at least 1949 with the founding in the US of a business for handling payroll processing, which still operates today under the name ADP, LLC.

The more recent expansion of services outsourcing was enabled by the digitization of information, decreasing costs for data transmission and a wave of process re-engineering. By the early 1990s, most large companies outsourced one or more information services, only a small share of which were contracted overseas (Sobol and Apte 1995).

As processes were broken down into modules, those that were most routinized (making them imitable and therefore of limited strategic value) could be outsourced. Now even R&D is increasingly outsourced, mostly to other domestic firms. According to data from the National Science Foundation, US firms contracted roughly 11% of their R&D expenses to outside companies in 2011, more than double the level of a decade earlier.

Call centres were one of the early successes for outsourced services. Initially, call centres were located domestically in small cities or higher-unemployment locations or in other developed countries such as Ireland. The phenomenon then spread to developing countries, particularly the Philippines and India.

During the 1980s, a number of Indian firms built capabilities in software development for international clients (Athreye 2005). This showed that India had a sizable pool of trainable talent.

After large MNEs such as General Electric, Citicorp and Hewlett-Packard pioneered the offshoring of other business services to wholly owned subsidiaries in India, other companies sought to capture similar cost savings. Starting in the 2000s, companies in the US and Europe, with the help of consulting firms, tapped Indian contractors for low-cost, routinized business services. These could be anything from accounts receivable to the more repetitive aspects of product development. Over time, the improvement of local capabilities – and the growth of trust between local firms and MNE clients – allowed the services provided to become more and more sophisticated. India remains by far the largest source for these business process outsourcing services (Dossani and Kenney 2007).

The Strategy of Outsourcing

A number of companies have experienced disappointing or even negative outcomes with outsourcing programmes that were conceived and/or executed poorly (Bryce and Useem 1998). Strategy thinkers have developed methodologies to help guide external sourcing decisions and improve results.

One well-established framework for thinking about the decision is the ▶ transaction cost economics perspective. Any function should be contracted out if the total transaction costs of doing so (with particular attention to the risk of opportunism by one of the parties after the fact) is less than the transaction costs of keeping the activity in-house (Williamson 1975; Strange 2011).

The pure transaction cost perspective ignores questions of strategy, such as whether the activity is part of the client's 'core competencies' (Quinn and Hilmer 1994). A firm must protect and

maintain the internal capabilities that underpin these competencies, which are its unique and strategic advantages. Moreover, the transaction cost lens overlooks issues such as flexibility of the activity in the event change is required to the product or service and potential benefits of dynamic learning from the activity.

An approach to the outsourcing decision that combines transaction cost logic with strategic factors is ▶ profiting from innovation (Teece 1986, 2006). This framework highlights the interplay between invention, intellectual property, complementary assets and time-to-market considerations in choosing the boundaries of a firm's activities. Chesbrough and Teece (1996) added another dimension by noting that some activities on critical innovation paths should not be outsourced.

For all companies that outsource, the ability to monitor and evaluate suppliers to maintain quality, performance and pricing is critical. In other words, firms cannot just outsource elements of their value chain and forget about them; they must retain sufficient knowledge in-house to understand, guide and coordinate external suppliers (Brusoni et al. 2001). Rothaermel et al. (2006) provide evidence that a hybrid approach – partially outsourcing some activities while also practicing them in-house – can result in benefits for product development and financial performance by facilitating the firm's access to external know-how while maintaining the necessary absorptive capacity to benefit from it.

Increasing the scope of outsourcing may first require redesigning processes or carefully codifying and documenting interfaces between groups of activities. Some value chain steps may be more separable than others, and this can vary by product within a company. In the semiconductor industry, for example, design and manufacturing can be undertaken by separate companies on different continents for many kinds of microchips, but this is rarely the case for memory chips because they require 'bleeding-edge' manufacturing processes that benefit from unstructured feedback between designers and fabricators (Monteverde 1995).

In the case of outsourcing innovation, the firm must understand whether the product or service it is developing is autonomous or systemic in nature (Teece 1984). In the case of a ▶ systemic innovation, the external acquisition of technology must be done with caution (Chesbrough and Teece 1996). It may even be worth developing an internal version of a technology that already exists outside the firm in order to avoid over-dependence on a supplier for critical know-how (Monteverde and Teece 1982).

There is a limited empirical literature on the relationship of outsourcing to financial performance, in part because it is difficult to design a valid study that connects the outsourcing of a particular activity to a company-wide outcome. The performance effect of outsourcing could also be hard to find if it depends on how well the firm has optimized its overall level of outsourcing. Kotabe and Mol (2009) found that firms face an inverted-U relationship between outsourcing and performance. If a firm is on the upward-sloping portion of its curve, then increased outsourcing leads to improvement. But if a firm is past the theoretical optimum level of outsourcing, then the relationship with performance turns negative.

The studies that exist have had most success identifying performance benefits associated with outsourcing designed to reduce costs. An outsourcing study by Gilley and Rasheed (2000) using a sample of manufacturing firms found no overall performance effect, but they found a positive relationship for a subset of firms pursuing a cost leadership strategy. Jiang et al. (2007), using data on announcements of outsourcing contracts by Japanese manufacturers, found a positive effect on firm market value. The result is driven by the subset of contracts with offshore contractors; domestic outsourcing had a slight negative effect. They hypothesized that the offshore contracts involve more mature technology and are more likely than domestic contracts to be cost-reducing. Similarly, Görg and Hanley (2011) found that international outsourcing of services by Irish manufacturers appeared to have a positive effect on profits and innovative activity, while domestic outsourcing did not.

See Also

- Autonomous Innovation
- Co-specialization
- Make-or-Buy Decisions: Applications to Strategy Research
- Profiting from Innovation
- Systemic Innovation
- Technology Transfer
- Transaction Cost Economics

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Overconfidence

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Abstract

This article considers the phenomenon of overconfidence whereby an individual, group or organization believes that it has more knowledge or skill in a particular domain than it actually possesses. It outlines the three distinct forms of confidence that have been identified in the literature: misestimation, misplacement and misprecision. It goes on to discuss various ways in which organizations can adapt their judgement processes to reduce the incidence of overconfidence, highlighting some real-world case studies. It ends with some observations and suggestions for future research in this complex area.

Definition Overconfidence is the belief that an individual or organization possesses greater knowledge or skill than it actually has. Overconfidence occurs in at least three distinct forms: misestimation, misplacement and misprecision.

According to Montaigne, 'We easily enough admit an advantage over us of courage, bodily strength, experience, disposition, or beauty in others; but an advantage in judgment we yield to none' (Montaigne 1851: 332–3).

Overconfidence is the belief that we have more knowledge or skill than we actually possess in a particular domain or task. It is one of the most pervasive and seductive illusions. Few escape it, even disciplined strategists. Overconfidence commonly appears in three distinct forms (Moore and Healy 2008).

Misestimation

This form of overconfidence occurs when people incorrectly estimate quantities, usually in predictable ways. For example, the strategic planning group might state, 'Our firm can have the proposed facility fully operational within 27 months' time', when in fact it will take double that time. If this happens once, it could be a just random prediction error. But too often, in real business cases, the promised deadlines needs to be extended and budgets are underestimated rather overestimated. This specific type of systematic misestimation has been given its own name: the planning fallacy (Kahneman and Tversky 1979; Buehler et al. 2002; Flyvbjerg 2006).

It matters how misestimation is measured. Considering only one option, such as 27 months, typically yields more overconfidence than offering two options. So, senior management might reframe the prediction, 'A facility like this typically takes at least 36 months to complete. Which duration, 27 months or 36 months, do you believe will prove closer to the actual time for completion? Please tell us how sure you are of your choice with a probability from 0.50 to 1.00 and why.' The strategic planning group now has to consider two estimates, which naturally brings to mind arguments for and against either one. When competing estimates are presented, there is usually a considerable reduction in the level of overconfidence because the uncertainty inherent in the prediction is now explicitly acknowledged.

Nonetheless, in many situations only one estimate will be seriously considered by management. For example, when Jack Welch was CEO of General Electric (GE), he pursued an aggressive growth strategy that relied heavily on acquisitions. GE's executives systematically honed their expertise by regularly reviewing past acquisitions relative to the targets that had been set. In particular, GE wanted to learn why deals might

fail, as a number had, including the purchase of Kidder Peabody in the 1990s. Jack Welch, who had scored big with prior acquisitions, mocked his own short stature and baldness when commenting on his Kidder Peabody mistake, 'I didn't know diddly about it. I was on a roll . . . I thought I was six-foot-four with hair' (Welch 2006: 72).

Jack Welch is hardly alone in being overconfident. Finance scholars, who typically believe in efficient markets and rational economic agents, have advanced a 'hubris hypothesis' to explain overpaying for acquisitions (Roll 1986; Malmendier and Tate 2008). This behavioural hypothesis argues that acquiring CEOs are often overconfident in the synergies and growth projections they envision once the target company comes under their control (Smaoui 2010). Consequently, acquirers continue to pay high stock premiums even though only a minority of these acquisitions works out well. The deeper puzzle is why acquiring firms do not learn from past experience and adjust the stock premiums they are willing to pay to better match industry-wide base rates. But over-confidence has an illusory quality that blinds victims to their own folly.

Misplacement

This form of overconfidence relates to *relative* comparisons. It reflects that people usually place themselves too highly when comparing themselves to others. For example, the strategic planning group, when warned that 'no competitor has ever built a facility like this in 27 months', might respond that 'We're better than our competitors.' It doesn't trouble them at all to know that other firms couldn't complete a similar project in 27 months. Misplacement may be the most apparent form of overconfidence, because we see it so clearly in others. Consider this example taken from academia: 94% of university professors rated themselves as better than average in teaching performance, while 68% ranked themselves in the top quarter (Cross 1977). Similarly, most of us consider ourselves to be drivers of above-average ability (Svenson 1981); remarkably enough, even those hospitalized for a traffic accident (Preston and Harris 1965). To remove the problem of different drivers holding different definitions of 'good driving' (consider a comparison of the standards of teenagers with those of the elderly), we routinely gave our students an objective behavioural test of good driving. In all surveys a majority believed that they would score above the average of their classmates. Clearly, the top percentiles in these various studies are overcrowded. And, necessarily, the bottom is sparse. Few people want to rank themselves below average on anything that has positive social value – this is known as the above-average effect (Alicke and Govorun 2005; Moore 2007) or illusory superiority, or, more light-heartedly, as the Lake Wobegon effect, after a fictional town where 'all the children are above average' (Peterson 2000: 45). Mannes and Moore (2013) provide numerous examples of overconfidence in the real world, most of them of the misplacement form.

Misprecision

A third form of overconfidence is the belief that we are able to predict or estimate quantities more accurately than is actually the case. For example, the strategic planning group might say, 'We are 90% certain that the final cost of the completed facility will lie between $740 and $794 million.' Moore and Healy term this overprecision, since the subjective confidence interval is too narrow (see Table 1). The proportion of misses, which should be 10% in this case, typically exceeds 50% (Russo and Schoemaker 1992; Soll and Klayman 2004). Although demonstrations of misprecision are common, similar findings in naturally occurring situations with real costs to error are difficult to document with scientific rigour. In one notable case, Ben-David and Harvey (2013) analysed the probability distributions of stock market expectations provided by senior financial executives. They found that 'realized market returns are within executives' 80% confidence intervals only 33% of the time' (Ben-David and Harvey 2013: 1). Such overprecision can be especially harmful in negotiations where parties have to estimate the other side's reservation price

or best alternative to a negotiated settlement (BATNA). Whenever the zone of agreement is underestimated, due to overly narrow confidence ranges about the other side's BATNA, the party most overconfident typically leaves more money on table (Neale and Bazerman 1992; Larrick and Wu 2007).

Costs of Overconfidence

There are context-specific costs of overconfidence, such as those in negotiation listed above; but there are also more general costs. They fall into two categories: premature commitment and the over-allocation of resources. In the former, mangers commit to a plan, project or person when they are confident of success. However, because of the overestimation of that likelihood (for example, considering the probability of success is 0.90 when it might be only 0.70), the commitment is ill-advised. If the managers had correctly estimated the likelihood of success, they would not have proceeded. In the second case, the cost is not in the timing but in the size of the resources committed. Managers are more likely to overbid in an auction, pour too much money into an internal project, or overpay for an outside recruit if they are overconfident of eventual success.

Measuring Overconfidence

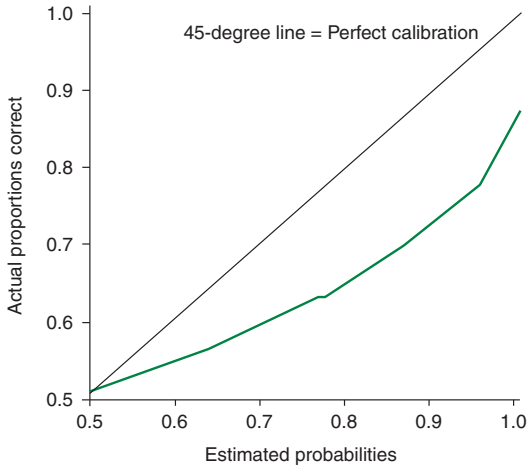
The easiest method for assessing misprecision is to ask for confidence ranges on individual estimates. People are asked to estimate an unknown quantity, such as the cost of a proposed new facility, and to provide their confidence interval around that best estimate. As Table 1 shows, when managers of a computer company were asked to provide 95% confidence intervals, they missed 80% of the time for general industry questions and 58% of the time for questions about their own company. In numerous similar studies, the percentage of actual misses greatly exceeded the target level, independent of the confidence range tested.

Another way to measure overconfidence is to present subjects with a clear assertion, such as the 27-month timeline for the proposed facility to be fully operational, and then to ask them for a subjective probability that the statement will be true. This method can be used to measure both the misestimation form of overconfidence and also the misplacement kind. Figure 1 shows a typical calibration curve for binary choice questions where subjects indicate how sure they are that the answer they chose is, in fact, correct. If they are well calibrated, the data should fall closely along the 45° line. For example, when people claim to be 90% certain, they should ideally be right 90% of the time. But usually they fall short, as the curve below the 45° line shows (Lichtenstein et al. 1982). Only near 50% do people seem well calibrated, which is the case when subjects admit they have no clue as to which of the two answers is right. The problem starts the moment they believe they have knowledge about the issue at hand, in which case overconfidence starts to creep in.

Overconfidence, Table 1 Misprecision form of overconfidence across industries

Industry tested	Kind of questions used in test	Percentage of misses	
		Ideal (%)[a]	Actual (%)
Advertising	Industry	10	61
Computers	Firm	5	58
Data processing	Industry	10	42
	General business	10	62
Money management	Industry	10	50
Petroleum	Industry and firm	50	79
Pharmaceutical	Firm	10	49
Security analysis	Industry	10	64

[a]The ideal percentage of misses is 100% minus the size of the confidence interval. Thus, a 10% ideal means that managers were asked for 90% confidence intervals



Overconfidence, Fig. 1 Overconfident predictions

Causes of Overconfidence

Overconfidence can have multiple causes, which is one reason why the phenomenon is so widespread.

Cognitive

Cognitive difficulties fall into two broad categories. The first is failures of imagination, especially not recognizing the myriad paths to different futures (particularly those leading to failure). For example, planners may not anticipate all factors that could delay the proposed facility beyond 27 months. The second is selective attention when one aspect of the issue, for example one option, argument or attribute, drives the prediction (Mussweiler et al. 2000; Soll and Klayman 2004; Sieck et al. 2007).

Such a biased focus is often accompanied by a selective search for information that supports rather than challenges the dominant belief (a form of confirmation bias). A leaning towards one position can also cause a bias in the interpretation of information, even balanced information, to support that position without the person's being aware of this distortion (Russo et al. 2006). Too often the result is a coherent picture of a path that leads to an unrealistically positive prediction. As Daniel Kahneman, Nobel Laureate in Economics, states, '[i]t is wise to take admissions of uncertainty seriously, but declarations of high confidence mainly tell you that an individual has constructed a coherent story in his mind, not necessarily that the story is true' (Kahneman 2011: 212). Strategic decision makers must be particularly on guard about seemingly plausible explanations that tell only part of a more complex story.

Motivational

Believing that we are more knowledgeable or capable than we really are can satisfy several goals. In groups, conveying (over)confidence can enhance our relative status by making 'the individual appear competent to others' (Anderson et al. 2012: 718). When managers want to drive a discussion in a preferred direction, they begin by expressing confidence that the facts have revealed the best path forward. That confidence often spreads, giving others the courage of the speaker's convictions. The link between confidence and efficacy in the eyes of others has even formed the basis of an evolutionary argument for the value of overconfidence (Johnson and Fowler 2011). Some of the benefits of overconfidence in business have been discussed by Van Zant and Moore (2013).

Turning from the social to the individual, overconfidence may help to maintain a positive 'can do' attitude. It is often said that 'you can if you think you can' (Peale 1987) and that you can't if you think you can' (which may be a self-fulfilling belief). Before any arguments for overconfidence can be accepted, it is essential to distinguish between, on the one hand, making a decision in the sense of identifying and committing to a course of action and, on the other, taking the steps to implement that chosen action. The 'positive psychology' of believing in your abilities is best confined to the implementation phase of strategic management (see Seligman and Csikszentmihalyi 2000, for the classic case for positive psychology; but also see McNulty and Fincham 2012, for an important qualification). Perhaps overconfidence in one's abilities, by visualizing success or by reducing performance-degrading anxieties, can be productive in the

execution of a decision. However, the required self-deception is likely to harm the judgement phase. Overconfident executives are likely to commit prematurely to budgets and timelines, or take other forms of risk that could not be justified by a realistic evaluation of those same projects. In golf, for example, players are not well served by being overconfident in their club selection. However, once a club has been drawn from the bag, it may pay to believe, even overconfidently, that the shot can be made. An overconfident commitment to build the facility in 27 months may increase motivation and, therefore, the likelihood of success. However, what happens to the credibility of the organization and its leadership when that optimistic deadline is not achieved? We do not claim that overconfidence cannot be useful in some situations, but we do warn that the downside can be costly.

Physiological

Alcohol, drugs and mood are physiological phenomena that can affect many kinds of judgements, including confidence. For example, is the real danger from drunk drivers that their abilities are impaired or that their confidence in those abilities remains too high? The latter seems the bigger culprit given that people with impaired driving abilities, such as the elderly, typically drive safely when they are not drunk. There are many other physiological effects associated with mood, such as euphoria due to past successes or a corporate pep rally. Sometimes overconfidence can be countered by the imposition of restrictions. Royal Dutch/Shell, for example, would not allow seriously jet-lagged executives to sign major contracts for a period of 24 h after landing. It is usually wise not to fire people without sleeping on it for at least a night. Part of managing overconfidence is recognizing circumstances when a strategic manager is not sufficiently fit to make a sound judgement (e.g., when angry, sad, ill or otherwise unstable). Unfortunately, those most unfit may be the last ones to realize this (as with drunk driving). Mood has a much larger influence on our judgements than most people realize, precisely because its effect on our thoughts and actions is often unrecognized.

Environmental

Finally, the external environment may reward overconfidence. In a business meeting, the manager who begins with 'I'm not sure; there are many complexities here' may get less attention than the colleague who says, 'I'm certain what to do and here's how we can do it'. Confidence is viewed by many as a necessary attribute of leadership (See et al. 2011). At the group level, collective overconfidence may elicit a feeling of superiority, a known warning sign of groupthink (Janis 1982). Organizations that are more hierarchical often instill, or at least tolerate, overconfidence (Claussen et al. 2012). It may be hard to speak truth to power in such companies, and a feeling of power in turn often leads to more overconfidence (Fast et al. 2012).

The above causes, in various combinations, make misprecision of confidence intervals a nearly universal phenomenon. The same is not the case, however, for the other two kinds of overconfidence: misestimation and misplacement. Both of these, but especially misplacement, have been shown to depend on whether hard versus easy items are being tested (Larrick et al. 2007). For difficult items, whether in terms of knowledge or skill, people tend to overestimate their performance. Thus, when asked which city is farther north, Madrid or New York, they overestimate their accuracy, as shown in the right half of Fig. 1. However, when asked easy questions such as whether New York or Oslo is farther north, they underestimate their actual likelihood of being correct. (Both Madrid and Oslo are farther north than New York.) The main reported reason for underestimation is imperfect knowledge of our performance abilities (Moore and Healy 2008.)

Although misestimation and misplacement do not occur in all situations, they are especially treacherous for strategists and senior leaders, who typically face difficult challenges rather than easy ones. Hence, all three forms of

overconfidence pose serious risks for managers at more senior levels.

Remedies for Overconfidence

We divide the techniques for ameliorating overconfidence into two categories. The first is *prevention*, which includes all methods that reduce overconfidence *before* it affects a decision or judgement. The second category is *ex post* learning; this includes all techniques that help learning *after* overconfidence has struck. Naturally, prevention is more attractive, since learning occurs after the cost of the mistake has been incurred. Further, *ex post* learning may be hindered by the high complexity of such decisions and the long time it takes to see the outcomes of strategic judgements. In such cases, prevention may be the only effective way to deal with overconfidence. Nonetheless, the broader value of post-experience learning and future prevention should not be discounted.

Most of the techniques below for reducing overconfidence may also have the important side benefit of improving the accuracy of the judgement. The two are often confounded, which complicates research but is welcome to strategic managers who, in effect, receive a double benefit.

Prevention

Consider first those remedies that an individual can apply alone. They involve challenging or extending the current reasoning process. One proven technique is the generation of reasons pro and con each of the available alternatives (Koriat et al. 1980). When judging whether the proposed facility can be constructed in 27 months, many managers make a prediction and then generate reasons why they are right. It would be better to also consider con reasons; why the person may be wrong. The pro–con technique requires an honest effort to find plausible reasons, as many as possible, that argue both for and against each prediction. A refinement of reason generation is to rate each reason's credibility, value and so on. For instance, Neustadt and May (1986) rated reasons as based on information that is known, presumed or unclear. The main value of pro–con reason generation lies in those reasons that go against the preferred leaning. By finding arguments against, say, the 27-month deadline, new factors may be considered – from labour strikes to supply disruptions – that lower the chance of meeting the proposed deadline to more realistic levels.

A related, but underutilized tactic is prospective hindsight. Here one must imagine that a plan or project has failed or succeeded at some future time and then look back to explain this failure or success (Mitchell et al. 1989). People usually generate more reasons when thinking in an imaginary frame of hindsight (e.g., 'As it turned out, more than 27 months was needed. Why?') than when trying to anticipate possible outcomes (e.g., 'Give reasons why more than 27 months will be needed'). Other methods for improving imagination include fault trees (multiple paths to failure based on all past cases) and the development of multiple scenarios of the future environment. ▶ scenario planning starts by identifying the biggest uncertainties in the proposed plan and then explores how different combinations of outcomes might result in scenarios quite different from those currently considered (Schoemaker 1995).

Although misprecision is generally the most intractable form of overconfidence, it can still be reduced. For instance, Soll and Klayman (2004) required slightly more elaborate confidence intervals, which increased the likelihood of those intervals' capturing the true answer. Haran et al. (2010) extended this idea to the explicit probability of each of the various possible outcomes. For instance, instead of just asking for a 90% confidence interval (for a temperature at a specified time and place), they requested probabilities for all temperature ranges (e.g., 0–10°, 11–20 . . . 90–100). When they compared a regular 90% confidence interval with the same size interval inferred from the probability distribution, they found the latter to be both significantly wider and more accurate.

Overconfidence can also be reduced by considering the base rate of success or failure for similar endeavours (Lovallo and Kahneman 2003). This 'outside' perspective starts by asking, before knowing the specifics of the project, what the historical chance of success or failure has been

for this class of project. For a new facility one would ask, what is the typical overrun in time and money for projects such as this? Suppose the answer is an overrun of 30% in time and 42% in cost. In the absence of more specific project knowledge, these numbers can be applied as fudge factors to the current project. Also, the following questions should be asked: Why are managers certain that they can do so much better than these base rates? Why doesn't the project belong in the category? and why can the fudge factors be safely ignored? The outside perspective forces more objectivity into the analysis, diminishing hope and hype, while focusing on hard numbers and any other available facts. They move managers away from the low-effort presumption of the 'no fault' scenario (Merrow et al. 1981; Carlson and Guha 2011) and force them to consider whether their specific situation is genuinely different from the typical case and whether it will really differ from their known base rates of time and money. Leaders should generally be suspicious of claims that a new project has a higher chance of success than a base rate analysis would suggest, unless arguments can be marshalled that are compelling enough to counter the base rate prediction.

An intriguing tactic devised to increase the accuracy of estimates, though not yet applied to overconfidence, is asking for two estimates from the same person. Herzog and Hertwig (2010; see also Soll and Klayman 2004) required their subjects to assume that their first estimate 'was off the mark', then to generate reasons why, challenge the assumptions of that initial estimate and, based on these reasons and challenges, provide a revised second estimate of the same quantity. The average of these two values, even though they came from the same person, significantly improved accuracy.

The above remedies can all be applied by a single person working alone, although assistance from others can make these techniques even more effective. However, there are further techniques that do require the participation of others. The simplest and most common way to generate con reasons is the use of a devil's advocate. Sometimes this is private, as strategists quietly seek challenges from a respected colleague before moving forward. At other times, it is not only public but institutionalized, as when the role of the devil's advocate is official, routine, rotated and enlarged (two team members simultaneously are assigned this role or an entire team forms the loyal opposition). The US Army has even trained sceptics, the equivalent of skilled devil's advocates (Mulrine 2008). There are other organizational interventions that can prevent overconfidence, such as encouraging speaking truth to power (see Heath et al. 1998) or airing taboo scenarios (Schoemaker and Tetlock 2012). In addition, managers can sometimes go outside their organizations to incorporate information that is public and aggregated, such as tapping into prediction markets (Servan-Schreiber et al. 2004; Graefe and Armstrong 2011).

One successful example of how to create an organizational culture that reduces overconfidence is described by Mandel (2009; and summarized in Arkes and Kajdasz 2011). Canadian intelligence analysts made specific predictions, such as whether or not a key event would occur in, for instance, the Middle East. They were given time to form a reasoned assessment, and those assessments were reviewed (and challenged) by informed others. Using a standard index of calibration bias that ranged from 0 (perfect calibration) to 1.0 (worst possible), the analysts' value was 0.014, a very high degree of calibration.

Learning

The second approach to reducing overconfidence is to examine it once it has happened, as occurs in 'lessons learned analyses' or 'after action reviews'. These official post-mortems are focused on improving future performance in general, but they often reveal overconfidence to be one flaw in the process. These lessons, in turn, can be used as pre-mortems for future projects, in the spirit of the above cures (Klein 2007).

One complication in *ex post* learning is that it may be hard to ascertain that any single wrong prediction was based on an overconfident judgement. Unless persuasive case studies can be developed, as historians try to do, one needs to collect

many predictions and track their results, as in Fig. 1. However, even this kind of strong statistical feedback may be insufficient. We also need to hold people accountable and reward good calibration, as the US Weather Service did so effectively (Murphy and Winkler 1987). Statistical feedback combined with accountability works best when the external prediction environment is relatively stable, so that learning can occur and be safely applied to new cases. It also helps when the feedback is as precise as the precipitation evidence that weather forecasters receive, because there is no possibility for a self-serving interpretation (e.g., negative outcomes derive from bad luck but positive ones come from the manager's skill and effort). When the environment is less stable, such as predicting the duration and cost of a new, one-of-a-kind facility or entering a new market, those who are later accused of overconfidence can convincingly rationalize it as due to any number of situation-specific circumstances.

Are any professionals free from overconfidence? As mentioned, weather forecasters, who receive accurate feedback and are held accountable for the accuracy of their predictions, are very well calibrated. In the same spirit, Royal Dutch/Shell designed a training programme to help geologists develop excellent calibration. They were given files from their archives containing many factors affecting oil deposits, but without the actual results. For each past case, they had to provide best guesses for the probability of striking oil as well as ranges as to how much a successful well might produce. Then they were given feedback as to what had actually happened. The training worked wonderfully: now, when Shell geologists predict a 30% chance of producing oil, three out of ten times the company averages a hit (Schoemaker, personal communication).

There are a growing number of reported cases of underconfidence. Tomassini and colleagues (1982) observed this in accountants for intervals of 50% and 80%, but also found the familiar overconfidence when the much wider confidence interval of 98% was used. More relevant to strategists is the underconfidence of Canadian strategic analysts described above (Mandel 2009; Arkes and Kajdasz 2011). Why are these strategic analysts systematically underconfident? Their organizational culture trains them not to be overconfident, gives them sufficient time for study and judgement, submits analysts' estimates to a rigorous review by superiors and penalizes any overestimations that do occur.

Overprecision and Optimism

Overprecision is not the same as optimism, as demonstrated by the person who is too sure that his prospects are worse than they actually are. In early 1921, the outgoing Secretary of War of the United States was both pessimistic about the prospect of naval air power and highly confident (Russo and Schoemaker 2002: 77). To the suggestion that an airplane might sink a battleship, he replied 'that idea is so damned nonsensical and impossible that I'm willing to stand on the bridge of a battleship while that nitwit tries to hit it from the air'. The 'nitwit' in question was Billy Mitchell, the father of naval aviation in the US. The secretary was so confident that he refused even to allow a field test. Only a few months later his successor permitted just such a test and found that aeroplanes could indeed sink a big battleship. One can just as easily imagine a corporate naysayer who predicts that 'not only can this team not get the facility built in 27 months; they cannot even complete the plan in that time!' Although overconfidence can coexist with pessimism, it more often aligns with optimism, believing that we know more or can do more than is true. Note that the optimistic form of overconfidence can persist even in the face of monetary losses (Simmons and Massey 2012).

Closing Thoughts

The phenomenon of overconfidence is real, robust and highly consequential for strategic managers. It appears more in some situations than others, especially when only one alternative or position is considered. The last word, however, is far from being written about this complex subject. Researchers continue to explore when, why and how it arises, whether people, organizations and

cultures differ in their propensity for overconfidence, as well as which remedies are most effective in different situations. Humans' unjustified confidence in the quality of their decisions and judgements has been recognized through the ages. The Roman statesman and philosopher Seneca saw it as a barrier to learning, noting that 'many persons might have achieved wisdom had they not supposed that they already possessed it'. Voltaire recognized our 'ridiculous' preference for certainty over uncertainty as one of the driving forces of overconfidence, 'The state of doubt is an unpleasant one, however, the state of certainty is ridiculous.'

You can't fix it if you can't find it. The first step in eliminating any bias is to acknowledge its existence. In the case of overconfidence this turns out to be more difficult than it sounds. As John Stuart Mill wrote about human shortcomings:

> Unfortunately for the good sense of mankind, the fact of their fallibility is far from carrying the weight in their practical judgment, which is always allowed to it in theory; for while everyone knows himself to be fallible, few … admit the supposition that any opinion, of which they feel very certain may be one of the examples of the error to which they acknowledge themselves to be liable. (Mill 1926: 21)

The trick is not just to acknowledge that *sometimes* we may be overconfident, but to recognize that *now* may be one of those instances.

The second step is to find a way to reduce the bias. This is complicated by the multiple causes of overconfidence, including cognitive, emotional, physiological and environmental factors. Different causes may require different remedies, and these may need to be further tailored to the specific tasks and surrounding context. Amid all this complexity, it is worth keeping in mind two broad guidelines. First, there is great value in knowing what we know and what we don't know, in knowing the limits of our knowledge or having good 'meta-knowledge'. Second, there is also great value in a personal and organizational mindset towards challenging our beliefs through reasoned argument and constructive debate. It is worth remembering that there are two sides to nearly all significant strategic issues, even when at the moment one side seems so very clearly the only right one. Appropriate challenges will not only reduce overconfidence but will also improve the accuracy of our judgements.

See Also

- ▶ Behavioural Strategy
- ▶ Decision-Making
- ▶ Scenario Planning

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