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Competitive moves over time: The case of SAP

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Abstract

This paper applies the Red Queen theory to explain how organizations utilize various sourcing arrangements in order to compete in an evolutionary arms race where only the strongest competitors will survive. This case study incorporates competition and views sourcing strategies as a means to improve its viability to survive in the marketplace. The study begins with a review of sourcing literature to position the Red Queen theory within the sourcing literature. It subsequently applies the framework to a case study of SAP AG to illustrate how sourcing strategies changed over time in response to the logic of competition. The case study reveals that (a) organizations are adaptive systems and capable of organizational learning to make strategic changes pertaining to sourcing arrangements; (b) organizations select the terms in which they want to compete by developing certain capabilities within the firm; (c) organizations are reflexive and over time develop competitive hysteresis which allows them to become stronger competitors. In the case of SAP AG, various sourcing arrangements were selected over its 40-year history to respond to technological and market changes.

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1. Introduction

The study of information technology (IT) sourcing strategies has primarily focused on the analysis of IT functions that can be managed internally or transferred to third party vendors. The focus is on firms that use IT to support their business. As such, sourcing strategies are viewed as alternatives to manage resources based on a maximization strategy, which assumes limited resources. These studies have contributed greatly in the understanding the benefits of sourcing strategies with a tendency to focus on the processes within the firm, however they do not take into account how these decisions were made against a backdrop of a competitive marketplace. Moreover, researchers who have looked at these decisions have studied them at a particular point of time but did not consider how these strategic decisions altered the ability of an organization to compete in the long run. This research provide academics and practitioners insights on how to leverage sourcing arrangements for IT applying firms, few have considered investigating the use of sourcing arrangements from a software vendor point of view. Furthermore, considering that software vendors are viewed to have the “sole job ... to follow the trends and provide leading-edge software and systems” [1], few sourcing research have studied how software companies utilize sourcing strategies to manage its business activities and resources.

This paper fills a gap in the literature by addressing how sourcing strategies can contribute to the ability of software firms to keep up with the dynamic changes in the competitive market as well as how these sourcing strategies evolve over time. Specifically, it answers the research question: How can software firms utilize various sourcing strategies to keep up with changes in the market – i.e., technological changes, market demands and rival actions?

The paper applies the Red Queen theory to explain how companies evolve and come up with various sourcing arrangements to keep up with the pace of technological innovation. The Red Queen theory is an evolutionary theoretical perspective, which suggests that sustaining the current level of performance of an organization requires continuous adaptation to the competitive environment to keep up with rivals who co-evolve in an attempt to win an evolutionary arms race. The Red Queen theory suggests that organizations select the terms in which they want to compete by developing certain capabilities within the firm. Over time, organizations develop competitive hysteresis, which allows it to become a stronger competitor. With this view, an organization can be seen as adaptive systems that take part in the process of selection and adaptation of sourcing strategies to develop into a stronger player. Specifically, this paper applies the Red Queen theory to take into account other influences that are external to a software firm in order to contextualize its organizational strategy. Doing so, the paper illustrates through a case study of how SAP changed its sourcing strategies over time in response to the logic of competition to come out as a market leader in its field. In reviewing various sourcing arrangements that SAP undertook over the past 40 years, we can show how the organization responded to technological and market changes.

2. Sourcing research

IT Sourcing arrangements have been considered as an undeniable trend as a cost-saving option for outsourcing IT functions since Eastman Kodak’s decision to outsource to IBM, DEC and Businessland in 1989 [2-5]. Many of the studies that have looked at various sourcing arrangements have taken these from the perspective of a customer [4]. Advancements in the field have provided models to explain various approaches to sourcing [3]; provide decision-criteria for determining when to choose a particular sourcing strategy [6]; explain the risks [7]; uncover myths and motivations [8]; understand factors that contribute to its success [4, 9]; and provide best practices [2].

Sourcing arrangements require the formation of alliances which are “cooperative relationships driven by a logic of strategic resource needs and social resource opportunities.” [10]. Strategic alliances enable organizations to leverage the partner network’s resources [2, 11]. Networks that are formed through the formation of strategic alliances not only allow organizations to manage resources more effectively but also to increase the rate of innovation [12] and obtain economies of scale [1, 13]. Such alliances allow organizations to participate in a branching process and encourage innovation [12]; the rate of innovation is increased because strategic alignment with multiple partners provide access to different clusters of information [14]. These alliances are especially “relevant in high-technology industries, as the cost of RandD has sky-rocketed and access to privileged information has become increasingly difficult in an industry where innovation is the main competitive weapon” [15].

The organization's ability to innovate is dependent on its ability to recognize innovation opportunities as "a result of a conscious, purposeful search" [23, p. 6]. The firm can take several decisions and actions to come up with innovative opportunities to market a new product and/or service that is unique [16], rare [17], low cost [16]; valuable, inimitable, non-substitutable [17]; or scalable [18]. Another way is develop and patent new products through extensive research and development activities to keep competition out [19]. However, from an economic perspective that assumes scarce resources, one of the limitations of innovating alone is that it becomes too costly to chase every technological shift. Moreover, coming up with new ideas is so difficult that once the original design is made, it becomes even more difficult to make substantial changes, making further enhancements incremental [12].

A potential way around these inherent issues this paper proposes to look at sourcing arrangements as a way to support innovation activities that occur within a software vendor's organization. These sourcing arrangements can be viewed in the following broad forms: insourcing and outsourcing. Insourcing arrangements is a sourcing strategy where an organization considers an outsourcing option to augment its current resources with external resources [20]. It may take the form of either a temporary resource or long-term relationship with a preferred supplier [21]. For a software provider, in-house sourcing arrangements assume that the firm has the capability to develop innovative products and services for customers through effective management of internal resources. In this situation, an organization optimizes its internal resources and processes to develop new capabilities [17]. Furthermore, studies suggest that selective outsourcing – "the decision to source selected IT functions from external provider (s) while still providing between 20% - 80% of the IT budget internally" [2] – are more successful. Outsourcing is a sourcing arrangement where the work is moved outside of the company. One unique form of outsourcing, known as netsourcing, is defined as the ability to access or rent business applications and services through the Internet [6, 22]. In this particular model, the development of newer technologies have played a significant role in the outsourcing arrangements [22].

A considerable amount of the strategic management literature suggests that an organization is able to compete if it has (a) the ability to recognize new opportunities that provide it with first mover advantage [19, 23, 24]; (b) a strategy that is formulated in relation to competitive forces [16]; (c) the ability to transform resources into capabilities that are valuable, rare, inimitable and non-substitutable [17]; (d) the introduction of newer technologies has allowed companies to innovate at a cheaper rate at a faster pace [25]; or (e) the ability to scale up and learn from early innovator's experiences [18]. While these theories of competitive advantage have provided useful lenses to explain how organizations innovate to compete, the analyses of the actions in organizations are seen as separate items rather than simultaneous actions that occur. Thus, this paper looks at how firms are selectively adapting their sourcing strategies to respond to competition and integrating a strategic process perspective into the analysis of various sourcing arrangement through the use of Red Queen theory as a lens.

3. Red Queen theory

The Red Queen theory [26, 27] can be used to explain competitive advantage. It is a useful lens to understand how organizations evolve by combining behavioural aspects that take into account organizational learning and economic rationalities – e.g., the desire to increase market share and profitability – to explain how and why organizations compete. It is predicated on the notion of coevolution which suggests that organizations are in a never-ending race that requires them to constantly adapt simply to sustain their level of relative fitness [27]. This view of competitive advantage departs from earlier theories [16, 17] which do not consider that when firms coexist with rival firms, the improvements and feedback from the market are triggered simultaneously [27].

The Red Queen theory suggests that the evolution of a firm develops through a selection process. To win the race, an organization needs to outperform its rivals according to the context's logic of competition by "matching or exceeding the actions of its rivals" [27, 28]. The Red Queen theory assumes that the organization's viability is dependent on survive is based on its relative fitness to the competitors. It further stresses the importance of contextualizing an organization's strategic actions in relation to its historical and social setting to ascertain that the organization has the requisite capability to succeed [27]. According to the Red Queen theory, an organization that is historically exposed to competition generates stronger competitors and is likely to be more fit than the average organization that has not faced much competition. Likewise, new entrants are faced by the challenge of possibly

coming up with an industry-altering innovation to survive the entry process. Thus, changes in the industry take place as part of a selection-driven process.

For an organization, the choice of actions to respond to competition is informed by the experiences that the organization has had in the past and is relative to the knowledgeability of the human agents. Thus, the organization’s solutions show elements of reflexivity based on “competitive hysteresis, the current-time effects of having experienced competition in the past” [27]. When new challenges are faced, organizations try to develop new capabilities where the costs of adapting against multiple competitors tend to be higher than the same organization, which competes against a single rival. Over time, organizations accumulate experiences in responding to competition and gain the capabilities to deal with certain types of problems. One of the dangers for an organization that have established routines for solving similar problems is the possibility of falling into a competency trap which provides a disadvantage when circumstances have changed [27].

In the case of SAP, we posit that various sourcing strategies have aided SAP in the process of developing capabilities where the costs of adaptation have increased at a time when more rivals have challenged SAP. By looking at a historical view of SAP’s sourcing strategies, we can look at how various sourcing arrangements can aid the competitiveness of an organization rather than merely focus on the cost-saving benefits that various sourcing strategies are purported to have.

Figure 1 illustrates an application of the Red Queen Theory to sourcing arrangements for ERP vendors. We illustrate the RQSF is a relationship between four players, the Vendor that creates the ERP System, the User Organization who buys and uses the ERP System, the Rival who competes with the vendor and a Sourcing Partner who delivers services to the Vendor to produce and deliver the ERP system.

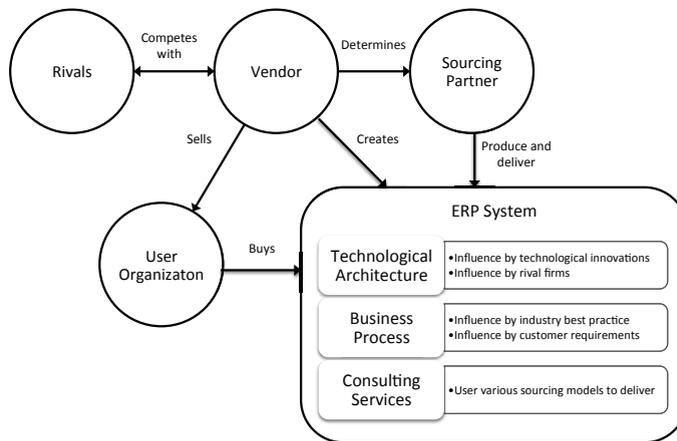


Figure 1. Red Queen Sourcing Framework

An ERP System is defined by Gartner Group, who coined the word in 1990, as “the ability to deliver an integrated suite of business applications” [29]. This definition suggests that the creation of an ERP system requires that a vendor is able to create a product and deliver a service on a particular technological platform, inscribed with specific business processes. A firm’s ability to compete amongst a multitude of alternative solutions is therefore impacted by its ability to maximize the resources available to it so that it can create innovative solutions that keep up with the changes in the market place. Thus, various sourcing arrangements can thus be considered and selected to target specific business needs – e.g., operational effectiveness, tactical support and strategic impact [30]. This is especially important in the context of competition and speed in technology evolution, which affects organizations internal sourcing responses over time.

4. Case study: SAP AG

The story of SAP is a case of how a software firm was able to fend off rival actions, which are destabilizing the current mode of developing software, which led to its adoption of a new sourcing activity. The case of SAP is interesting because it started out as a disruptive idea that challenged traditional models of developing individual customized solutions for businesses. Over time, it was able to adapt to the changing technological shifts, which enabled it to obtain and maintain a market leader position in developing ERP systems.

4.1. *Surviving the Entry Process*

In 1972, five former IBM employees started SAP with a vision of developing commercially off the shelf system (COTS) for real-time data processing. As a new entrant, SAP changed the way software was developed —i.e., SAP developed a core solution that is customized to fit its clients—at a time when software development was traditionally customized by consultants like IBM to meet specific client needs, developed on mainframe systems and catered to large enterprises. “New innovations by IBM’s rivals had to be exceptionally valuable from a customer’s perspective.” [27]

In the first year, SAP’s main revenues came from helping clients in their data centres. During nights and weekends they spent time on developing their first software on borrowed computers. In 1973, the SAP releases its first financial accounting module. This module serves as the cornerstone in the on-going development of other software modules of the system that will eventually bear the name SAP R/1; where R stood for real-time processing [31]. All the development is done on externally located IBM mainframe servers running DOS operating system. In 1974, the first technological shift occurred when SAP converted the financial accounting module from the DOS to the OS operating system for larger IBM servers. Within the next years, modules for purchasing, inventory management, and invoice verification were released.

A few years after the first installation, SAP obtains customers in Switzerland. The development of SAP’s software progressed after SAP completed the asset accounting module and its corresponding implementation at a pilot company. One of SAP’s customers – John Deere, the farm equipment manufacturer – played a significant role in the internationalisation of SAP’s product when SAP was requested to develop a multi-lingual version of the SAP’s accounting software to support several languages, countries and legal entities in 1975 [31].

For the first time in 1979, SAP began operating its own development environment / server (i.e., Siemens 7738) and started building its own data centre. Prior to this period, all development activities been distributed across data centres of regional customers. Later that year, SAP made an in-depth examination of IBM’s database and dialog control system, which led SAP to rethink its software and pave the way for SAP R/2, which was released in 1982 [31]. The following year they launched a sales and distribution application module, through a custom development project based on customer specifications.

4.2. *Cost of Adaptation and Expansion*

In the 80s, SAP’s rivals were focused on developing modular solutions for both large- and medium-size enterprises. One of SAP’s biggest rival was Baan Corporation, an established company founded by Jan Baan in The Netherlands in 1978 to focus on financial and administrative consulting services [32, 33]. In 1981, Baan Corporation started developing solutions on a UNIX operating system. By 1984, there were attempts to specialize in certain industry verticals to allow it to build a stronger position [33].

In the beginning of 1980s, SAP grew into a company with around 100 employees and appeared on an IT trade show. Joint development with customers was used as a strategy to develop and enhance the R/2 system, a mainframe-based software that is still considered to be a very stable system at this time. During this period, the production management module was released, followed by a module for production planning and control in 1983. In the following year, SAP expanded internationally and its first subsidiary, SAP International AG, was founded in Biel Switzerland [31].

SAP’s own data centre grew and hosted three IBM servers and on Siemens server with a total of 64MB of main memory and used for the development of software. An internal quality assurance committee was established to

improve the stability of software and increase the quality of work processes. Its first US headquarters was established in 1985 and as the global expansion continued in 1986, a subsidiary in Austria and a German branch office were opened. The eventual growth in the number of employees – reaching 300 – forced SAP to restructure and create different departments with managers. Changes in legislation governing balance sheets led to 100 new customers, and the subsequent growth in revenues. After three years of work, the SAP module for human resource management is released at the CeBIT fair in Hanover.

In 1987, the first non-German-speaking subsidiary in the Netherlands was opened. In addition SAP opened offices in France, Spain, and Great Britain in the same year. In the same year SAP held its first user conference in Karlsruhe, Germany, aimed at establishing a platform that enables current and potential users to share experiences. Moreover, IBM's new generation of servers enabled SAP's software to become available to midsize customers. SAP also establishes SAP Consulting to support new customers. In the next year, SAP begins developing RIVA – a billing and administration module for utility companies – to meet the requirements of selected industries. Later on, a user-friendly interface for SAP R/2 was introduced. The company also kicks off various development projects, including ABAP/4 programming environment in 1989. In 1990, SAP strengthens its financial bases by raising DM 85 million on the capital market and its used to further develop SAP R/2 and the new SAP R/3 system. Furthermore, a focus on midsize companies makes SAP acquire the software company Steeb and CAS.

By late 80s, distributed computing allowed newer applications to be built using UNIX workstations and personal computing [27]. In 1991, the sneak preview of first modules in the new SAP R/3 system is shown at CeBIT (Centrum für Büroautomation, Informationstechnologie und Telekommunikation). With its client-server concept, uniform graphical interface, dedicated use of relational databases, and support for servers from various manufacturers, R/3 is to be sold on midsize market as well as to the branch offices and subsidiaries of larger corporate groups. Expansion also goes east after the fall of the "Iron Curtain", including a cooperative agreement with the largest Russian software company ZPS and begins developing a Russian version of SAP R/2.

After the launch of R/3 in 1992, SAP changes its partner strategy to include independent consulting firms, which SAP refers to as "logo partners", to support customers in implementing the new system. As part of the new partner strategy, SAP enters a partnership with Microsoft to port SAP R/3 to the Windows NT operating system in 1993. SAP also begins participating in the IXOS project, a joint undertaking involving the development and marketing of an electronic archiving system for original documents. Furthermore, efforts to improve the technological base is put and a version of SAP R/3 with support for kanji characters to the Japanese market and R/3 is also being ported to SUN hardware, enabling it to run on all relevant RISC platforms.

In 1994, the R/3 system is released for Windows NT. One month later, a Swiss company becomes the first customer to go live with this new version. Besides the utility focus, SAP starts its focus on the retail industry by acquiring a 52% holding in DACOS Software GmbH and in 1995, more emphasis is put on midsize companies with the help of system resellers. Later the same year, SAP started to develop an industry solution for the telecom industry together with Deutsche Telekom AG.

In 1996, SAP took on another technological leap when it introduced its joint Internet strategy with Microsoft. Through open interfaces, customers can now connect online applications to their SAP R/3 systems. In addition, SAP can also take advantage of IBM's new AS/400 platform. They continue to involve costumers and has 4,300 guests at the European SAPHIRE event in Vienna. Meanwhile, over 8,000 attendees flock to the corresponding event in the U.S., and more than 5,000 are on hand for the first SAPHIRE event in Japan.

In 1998, a new interface is launched – EnjoySAP – at SAPHIRE in Los Angeles. SAP plans to make its software easier to learn, faster to work with, and simpler to customize to customers' needs. In May 1999, SAP announces a new strategy that completely realigns the company and its product portfolio: mySAP.com. This reorientation will combine e-commerce solutions with SAP's existing ERP applications on the basis of cutting-edge Web technology. To support the Internet focus a German Internet subsidiary e-SAP.de is founded reflecting the strong focus on the customer in the Internet age. This is followed by new applications for market places and portals and by outsourcing its corresponding area to its SAP Portals subsidiary and starting a partnership with Commerce One and TopTier.

Building on the Internet focus a new platform is launched in 2004 - SAP NetWeaver. This technology enables SAP to offer fast, open, and flexible business applications that support end-to-end business processes – no matter whether they are based on systems from SAP or other providers. SAP Labs China marks the ninth opening of a development location outside of Germany. This and the other research canthers in India, Japan, Israel, France,

Bulgaria, Canada, and the United States help SAP convert IT expertise into business utility for its customers. Also a new technological vision is in place when SAP introduces its plans for enterprise service-oriented architecture.

4.3. Competition Through Predation

The widespread adoption of ERP systems in the late 90s and early 2000 challenged several ERP vendors in their race to increase market share [34]. As such, the industry experienced a period of consolidation and witnessed several mergers and acquisitions. Shortly after SAP released in 2006 its SOA-enabled ERP, SAP makes several acquisitions – e.g., Pilot Software, Yusa, OutlookSoft, Wicom, and MaXware – the following year. SAP also announces its intention to purchase Business Objects, a company specializing in business intelligence (BI) applications. In May 2010, SAP announces its plans to purchase the company Sybase for approximately US\$5.8 billion. Sybase is the largest business software and service provider specializing exclusively in information management and mobile data use. The synthesis of the two leading companies is to produce solutions for "wireless" companies.

5. Discussion

In the Red Queen Theory, the process of change and adaptation can be seen as the firm's ability to prolong its viability to compete. Table 1 summarizes the logic of competition for SAP over time.

Table 1. Logic of competition over time.

Period	Rival activities	SAP's responses		
		MOTIVATION	ACTIVITIES	MODE
70S	Current Business Model: Software provider of "in-house" development of business applications for a user organization IBM is the biggest rival Technological Architecture: Mainframe-based Target Market: Large Enterprise	Development new business model "off the shelf systems"	Technological Architecture: Mainframe Business Process – focused on Manufacturing and Accounting Business Process - Develop common modules that can be sold as COTS Services - customizations can be made to the software Market - Large Enterprises	Insourcing by developing software on externally located IBM software Later in 1979 operated its own development environment and building its own data center Insourcing through joint development with client to produce software in other languages
80S	Modular solutions Baan is the biggest rival New Technologies: UNIX + C New Market segment: Midsize-market New business processes emerged: Human Resources	Focus is on global expansion Raise financial capital	Sold integrated solutions Technological Architecture: New Generation of Mainframe Servers (AS400) Business Process: Introduction of Human Resource Module Services – translation of software into different languages	Insourcing by knowledge acquisition - Acquires Steeb and CAS
90S	Technological Architecture: Client/Server Compete for new market Multiple competitors New Business Processes: Supply Chain Management, Customer Relationship Management, Product Lifecycle Management	Focus is to compete for new markets	Technological Architecture: Client/Server Business Process: Develop document archiving process Customer response: Improvement in software interface to make software easier to learn and use Market: Midsize market	Outsource development efforts e.g. IXOS project, industry solutions Outsource sales and implementation to partners Joint internet strategy with Microsoft in 1996 to develop new software
00S	Y2K/Internet boom Multiple competitors Focus on expanding to new markets and new offerings Enters a period of acquisitions	Focus on expanding to new markets and new offerings	Technological Architecture – Web-based, delivers new platform NetWeaver Cloud solution Market: SME market	Insourcing by knowledge acquisition Enters a period of acquisitions to acquire knowledge and customers

SAP's entry into the new market in the 70s was made possible because the founders of SAP were able to utilize its knowledge of the market from their prior positions in IBM. In the case of SAP, its founders had traditionally worked with an industry-leader, aided its ability to survive the entry into the race through the knowledgeability of the market. Moreover, its ability to develop modules that inscribed "common business functions", it reduced the cost of developing the system. From a development point of view, SAP was insourcing a lot of the application development for a user-organization. For instance, it first developed software for its clients by building them on externally located IBM software. It was only in 1979 when it began operated its own development environment where it built its own data center. It later used insourcing through joint development with client to produce software in other languages. Interestingly, from a customer point of view, SAP was actually providing them with an insource solution to develop enterprise applications for the user organization.

In the 80s, SAP responded to its competition by expanding globally through selective alliances and packaging their solutions as an integrated solution, at a time when its competitors were focused on selling modular solutions. Moreover, we saw that SAP started developing solutions on multiple platforms to keep up with various technological changes that were going on in the market. Instead of betting on a single platform, SAP decided that it would compete in the market with solutions on different operating systems. This was a very costly way to expand globally, not only did SAP face multiple competitors and competition, but it also quickly needed to learn how to develop software that supported multiple technological architectures and had to figure out a way to deliver it.

In the late 90s/early 2000, at a time when there was an increased demand for ERP packages, and companies started buying ERP software as a way to achieve business process reengineering, we can see that SAP responded to the competition in multiple ways. First, it changed its partner strategy to outsource some of its sales and customization efforts to increase the economies of scale and reach more customers. Corollarilly, this increase corresponds to an increase in sourcing activities from a user-organization point of view, where SAP can be seen as a long-term partner that develops business applications for the user organization.

Second, SAP insourced part of its development efforts in the form of joint development efforts with Microsoft to enable the delivery of new products. Third, it developed Internet-based solutions to try to generate new sources of income, essentially netsourcing some of its applications. SAP is netsourcing its product by hosting its solution for the user, and later by directly selling to the user. From a customer standpoint, it continued to have the same vendor-relationship with SAP but reduced the need to create an in-house server architecture for its needs which enabled a reduction of cost for their part. SAP's provision of a new architectural solution enabled it to provide a software solution that fit new demands of a user organization based on the software available in the market. SAP's choice of outsourcing strategies suggest enabled it to respond to the increased competition that it faced and found a new solution to its dilemma of scaling up its production and sales of software to meet market demand.

Finally, in the late 2000 SAP participated in a process of acquisition to allow it to increase its market shares, as well as expand its modular base. This predatory response to competition suggests, that in order to compete, SAP started acquiring knowledge and market bases to increase its capacity to innovate and scale. By acquiring solutions in the market place, it not only kills the Red Queen, but it also incorporates new knowledge about the market and new software solutions into SAP. The consolidation efforts during this period and predatory response of existing ERP vendors to obtain market share, and new entrants like Microsoft to participate in this marketplace is further proof that there is a real threat to the viability of an organization. Thus, in a competitive marketplace where only the strong players survive, SAP's attempts to improve the products and service it delivers entailed an ability to be agile, adaptive, innovative and responsive to market demands, and these efforts are supported by engaging in various sourcing activities while maximizing its resources.

5.1. Revised RQSF

As we have seen in the case, competition and technology evolution have made a significant impact on software development, technology management, thus organizations change their sourcing arrangement to respond to these shifts over time. Figure 2 shows a modified RQSF to show that sourcing arrangements are in fact based on three things: competitive environment (e.g., new technologies, new target markets, rival actions); maximization of resources; customer requirements.

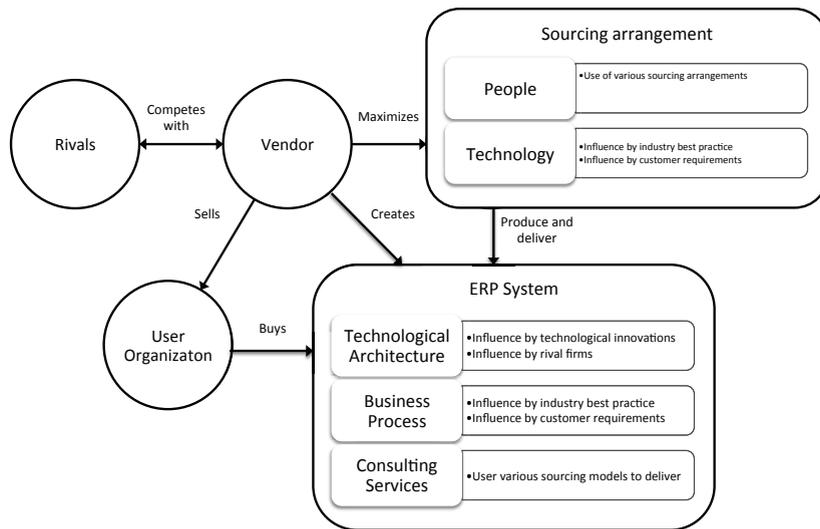


Figure 2. Modified Red Queen Sourcing Framework

In the case of SAP, we can see that it was an adaptive organization capable of making the necessary changes to allow it to fend off its competition and maintain its market leadership. Moreover, it shows that over time it developed competitive hysteresis which provided it with the know how to respond to new competition and it was able to take advantage of its 40-year expertise in the field of developing COTS products.

6. Conclusion

The case study method was an effective way to illustrate the applicability of this theoretical framework to the study of sourcing arrangements. Future research in this area can look into multiple organizations to do a comparative study of how various organizations have used various sourcing strategies to compete. By incorporating the Red Queen theory to view outsourcing strategies, we have shown that the motivations behind outsourcing are not limited to the maximization of resources but it can be attributed to the viability of the firm to outperform and survive its competition. This sheds new light and implications for practice to consider various sourcing arrangements in order to compete as well as academics to consider the competitive landscape for these decisions.

The findings reported here suggest that sourcing strategies play an important role in the ability for firms to compete in the marketplace. By applying the Red Queen theory to a case study of SAP, we have illustrated that in order to remain competitive organizations make strategic changes pertaining to sourcing arrangements and select various capabilities to maintain within the firm to allow it to maintain a competitive advantage. In reviewing various sourcing arrangements that SAP undertook over the past 40 years, we revealed how a software organization adopted various sourcing arrangements (i.e., insourcing, outsourcing, netsourcing), which changed over time in order to keep up with the technological shifts, customer demands and rival actions. We have seen that sourcing decisions have been generally applied in response to competition in multiple ways. First, sourcing decisions have been used for the management of the technological base. Second, sourcing decisions were used to develop new offerings (e.g. new modules or industry solutions) and enhance existing offerings (e.g. support of several languages). Third, sourcing decisions were used as a means to scale up operations by partnering with business integrators to increase sales. Finally, sourcing decisions were made to acquire knowledge and extend its capabilities. Over time, SAP developed competitive hysteresis, which allowed it to outperform and outlast its competitors. To date, SAP remains to be a dominant player in the playing field of developing ERP software.

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