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CONCEPT AND PROCEDURE FOR EVALUATING E-MARKETS

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Abstract

A more scrutinizing look into the mechanisms of eMarkets reveals a whole ecosystem of partners. eMarkets provide new opportunities, but bare also often considerable risks due to their novelty, immaturity and complexity. We expose why a company whose business model aims to play a role in eMarkets should evaluate eMarkets thoroughly. Based on a life-cycle model and required roles, we developed and implemented in the tradition of action research a concept and a procedure to evaluate eMarkets. The result has been tested in practice. We believe that it can be reused and also accustomed for other than the experienced role of an Integration Service Provider.

Keywords: E-Market roles, evaluation concept, cooperation risks, business models, eMarket profiles

E-Market Evaluation in Business Networking

The rapid evolution of Electronic Markets (eMarkets) has produced a myriad of new actors, business models and many competitors in the early “hype” phase of the so-called New Economy. First signs of a slowdown lead market researchers to project that only a few eMarkets will survive, while stressing that eMarkets are still a viable business model. It is therefore critical for Market Makers as well as the for the partners who are building or participating in eMarkets to assess the viability of eMarkets. In this paper we will focus on the analysis of business models, their implementation and their business ecosystem (cf. Moore 1996).

Working together with a service provider since 1998, we have helped them to form a new practice. Based on the principles of participatory action research (cf. Checkland/Holwell 1998a and 1998b, Probst/Raub 1995) and an with in-depth case study approach (cf. Yin 1994), we conducted a long term research together with the company. One of the results is a concept and a procedure to assess the viability of eMarkets out of the perspective of potential partner. We will show how this procedure contributes to the evaluation of the business model of an eMarket from the perspective of potential partners.

Role of Business Models and E-Market Configurations

The MIT eBusiness Process Repository sees business models as “what a company does and how they make money from doing it.”¹ We extend this basic definition by looking at six perspectives in order to encompass a more complete and comparable picture of the term. The elements determining a business model are: business architecture (business actors, their roles, inter-organizational processes), theory of the business (underlying assumptions and rules the business model is built on) (cf. Drucker 1994, 100), IS/IT-Architecture, benefits (qualified benefits for the participating actors), revenue model, (cf. also Timmers 1999, Klueber 2000, Hamel 2000), and legal issues (cf. Alt/Zimmermann 2001). In our understanding legal issues constrain and drive the configuration, in contrast to the other elements which are objects of design.

¹www.process.mit.edu/eph/Info/eModels.asp, accessed 17.02.2001

The importance of eMarkets arises from linking processes between organizations; as such eMarkets are value-adding intermediaries in Business Networks (Oesterle et al. 1999). The value proposition of eMarkets is that they facilitate trade between new or existing partners by increasing information transparency, avoiding media mismatches, increasing global reach of trading partners, and enabling a higher richness of content and processes to interact with partners

Technical, change management, strategic and political issues have however prevented a rapid emergence of perfect markets as defined by economics (cf. Bakos 1998, 35). It is crucial to be able to assess the business model of a Market Maker and the eMarket he's organizing, since often there is considerable investment related to the participation in eMarkets. From an abstract and aggregated point of view, inter-organizational relationships can take the following typical forms: one-to-many (1:m), few-to-one-to-many (few:1:m), many-to-many (m:m), many-to-one-to-many (n:1:m), many-to-one-to-few (n:1:few), many-to-few (n:few), and many-to-one(n:1) relationships. Figure 1 depicts configurations in which an eMarket is used as an intermediary or as an efficient way to implement intra or inter-organizational relationships of multi-national enterprises (often referred to as private exchanges).

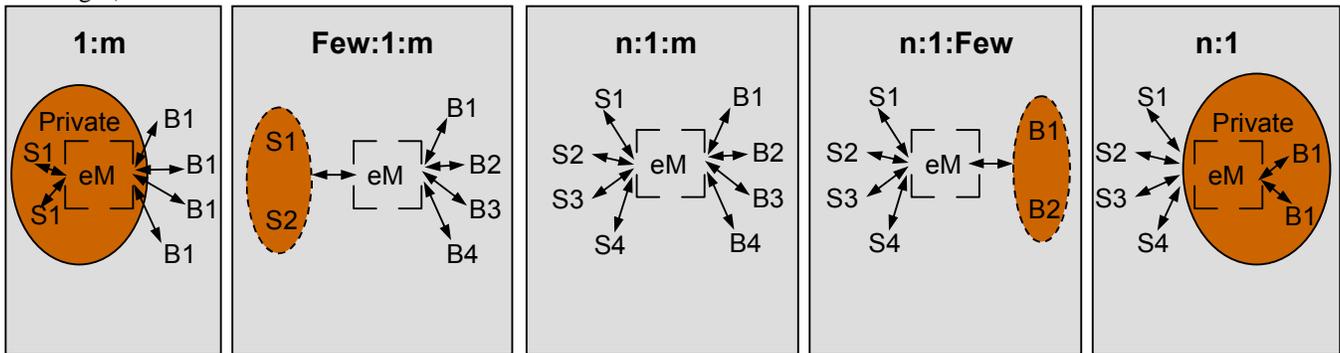


Figure 1. Typical Relationships Facilitated by eMarkets

With the widespread use of Internet technologies the development of eMarkets became easier and more promising over the last years. Potentially, eMarkets offer support to manage the relationships between companies in any of the possible configurations. In practice however, they fit best for the many-to-many type. An ideal eMarket supports all phases of a transaction in an electronic form (Schmid 2000, 14), uses market mechanisms to coordinate partners (Williamson 1991) and is open to new participants.

Several hundreds eMarkets exist worldwide. However, many of them are still under construction or are stopped before ever becoming operative. Out of the operative ones, only a few generate enough revenue from transactions or other services to be profitable. The wide and fast adoption seems to be very optimistic considering barriers like the lack of trust, knowledge, and technology investments of potential eMarket participants to actively used eMarkets. Worldwide, only a few eMarkets will survive in each industry and succeed in reaching a critical mass of participants, products and services to cover the industry members' needs (Oesterle et. al 1999).

Currently, building relationships with an eMarket by investing in it, partnering with it or using its services, proves to be a risky venture for companies. Even if they believe in eMarkets providing them with new opportunities and even if they are willing to invest time and resources to reap those benefits, they want to lower the risk of failure. Potential risks are eMarket specific investments in order to enable an end-to-end integration or can also take the form of missed opportunities not participating an eMarket that turns out to be better suited for the company. The evaluation of eMarkets and their business models is of high importance for all companies planning to build and capitalize an relationship with an eMarket.

Conceptualization of eMarkets

eMarkets can be seen as a logical space or media that is build on an infrastructure to coordinate activities via market mechanisms between buyer and sellers according to predefined rules (Schmid 2000, 3). A closer look at most eMarkets reveals an ecosystem of eMarket partners covering different roles. Partners often cover multiple roles and roles are added continuously in the evolution of an eMarket. The roles can be identified and delineated by considering the phases of an eMarket life-cycle (Durante et al. 2000, Wise/Morrison 2000).

The life-cycle consists of six phases: Invention, design, pilot, run, development, and retirement phase. For this paper, only the phases design, pilot, and run are relevant:

The idea to build an eMarket can arise from many sources, however the ultimate driving force is often the **Market Maker**, who identifies inefficiencies in the supply chain between **buyers** and **sellers**. He brings the different roles together by aggregating the eMarket offerings to suit buyers' and sellers' needs and defines the market rules.

In the design phase the Market Maker might be supported by **Professional Service Providers** to finalize the business concept (Hamel 2000). Professional services are a superset for all kinds of consulting ranging from strategy to systems integration. The outsourcing of human intensive professional services like procurement or legal advisory is summarized in this category as well.

Professional services might also be of help in the building phase when infrastructure providers and others are required or take on permanent responsibilities for ongoing activities like legal or tax advisory. To provide an attractive informational and transactional content a **Content Provider** might be required. This role can be fulfilled by an association or a professional content aggregator (e.g. Requisite). **eService Providers** can be used to enrich the offering and compose end-to-end solutions by adding modular and standardized services for the payment and logistics processes or other third party eServices like trust services. In the pilot phase **Integration Service Provider** roles to enable end-to-end electronically integrated solutions and **Application Service Provider** roles must be fulfilled. These should ideally be built on standardized products if the company itself has not a chance to establish its own de-facto standard. Examples of standards providers could be associations like UN or RosettaNet. **Platform Providers** are hardware, software and security providers. Many software companies, most of them start-ups, have identified the opportunity of eMarket suites and started developing solutions to offer a software basis for Market Makers. We now see software solutions for horizontal and vertical eMarkets based on standardized software competing with custom developed solutions. **Financial partners** that provide capital are influential but their role does not have to contribute to the direct service offerings by the eMarket.

The roles supporting the Market Maker (or other companies seeking to collaborate with trading partners in the supply chain) in the operational phase of his business are forming the **Business Collaboration Platform**. They are summarized in Figure 3.

The figure above shows the whole operative eMarket ecosystem that surrounds the Market Maker. Actively taking on a role in such an eMarket ecosystem can be driven by various motivations:

Buyers or sellers want to save procurement or selling costs. They want to improve their information exchange with partners enhancing the quality of strategic decisions and enabling collaborative processes. Increasing the flexibility is another major motivation for buyers and suppliers. This can be enabled through the selection of open platforms and eServices enabling a higher flexibility to connect their businesses. Finally, they offer the possibility to enter a new market or a new business area since eMarkets are a relatively new challenge or an extension of their current business.

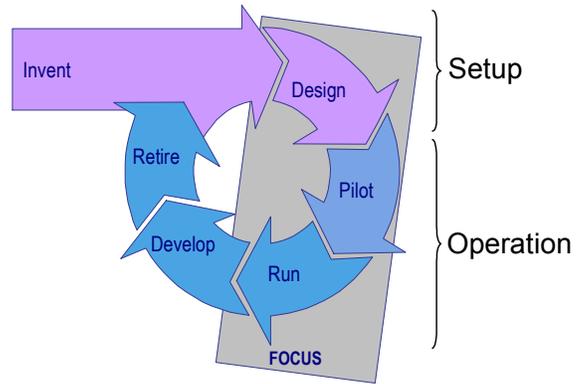


Figure 2. Life-Cycle of eMarkets

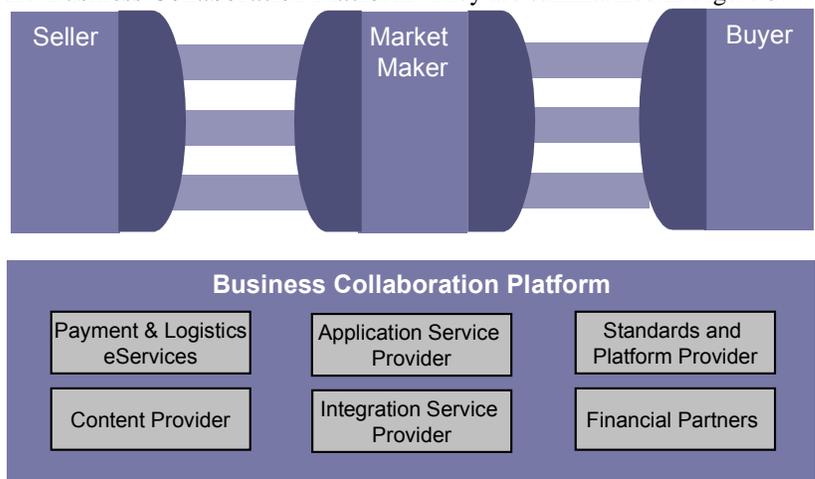


Figure 3. Roles of an Operative eMarket Architecture

For an actor considering to cover one role in the eMarket ecosystem by cooperating with the Market Maker as a partner or participating in eMarket transactions as a buyer or seller, the whole eMarket ecosystem has to be analyzed. In the ecosystem the buyers, suppliers and investors have the strongest influence on the position of the Market Maker and the success of the eMarket.

Risks of False or Superficial Choices

The problem when evaluating an eMarket lies in its very nature of requiring buyers and sellers or even third parties – the whole ecosystem - to be analyzed. Therefore, existing or future network economies are of a high importance (Shapiro/Varian 1999). One of the risks for an actor is to assume roles in too many eMarket ecosystems: Since there is not yet a standard irrespectively of the role an actor wants to take, it requires an integration project to participate. The cost of a myriad of integration projects can easily become prohibitive to success. Most of these integration costs have to be considered as sunk costs, if the eMarket was built on proprietary technology and fails to survive or attract the needed liquidity.

Secondly, there is a consolidation of eMarkets. One of the main players, ventro (www.ventro.com), stopped in November 2000 supporting Chemdex, where it was in the role of the Market Maker as well as Platform Provider. The investments of the participating partners are hardly to be regained and can be considered as sunk costs, unless there will be transformation service providers or tools. Thirdly, when investing in the participation in one or two eMarkets, a company has to exclude others. Which ones will survive is difficult to assess but critical for the future of the company. As long as many eMarkets for an industry or a horizontal category exist, the opportunity costs continue to be high.

By conducting an evaluation, a company can minimize that risk before entering the risky process of setting up a partnership and contacting the partner.

State of the Art of E-Market Evaluations

The approach taken originated in close collaboration with Triaton, who defined the initial problem situation. Triaton is a company of the ThyssenKrupp Information services group which was founded in autumn 2000. It emerged from the former IT units of Thyssen, Krupp Hoesch, and Hoechst. Triaton positions itself as a global, full service IT service provider.² Since Triaton has a history of integrating ERP systems and first experience in electronic commerce, we guided the process of identifying new business opportunities.

Transaction Volume – Supplier/Buyer Approach

One of the most commonly used criteria to assess eMarkets is the transaction volume. (i.e. actual ordering, delivery or payment transactions). Transaction volume reveals whether an eMarket is used or not, and whether other companies can rely on it. Liquidity can be seen as a variable indicating the efficiency (i.e. by creating "transparency" for pricing and process) of a market. A high transaction volume is achieved if the reduction of transaction costs, by using the market as an intermediary for Suppliers and Buyers, is high: This comprises costs of the whole process of seeking for information, contracting and the settlement of transactions (Schmid/Lindemann 1998). To reach a high transaction volume products and service offerings on the eMarket must cover the whole transaction process of its trading partners. This comprises the question of integration with the participants strategy, process and applications.

Furthermore, a high liquidity is likely to be an indicator of the business and IT knowledge and experience an eMarket has, as it results from experience gained by offering an attractive business model and successfully implementing it.

However, when looking at transaction volume both has to be considered, the number of customers as well as the frequency of transactions. The first one can be achieved by a certain stickiness between the customer and the eMarket, which is an indicator of the retention power of the market. For a long term success an eMarket has to build a strong customer relationship and must reach a high frequency of transactions leading to a solid revenue model in order to be profitable.

Estimated Market Value - Financial Partner Approach

The question whether a revenue model can be generated that supports the generation of value for the providers of capital is the starting point for investors. Since New Economy companies represent an investment opportunity, financial institutions have started publishing reports on eBusiness players. The main evaluation criteria are traditional financial performance measures like

²In the fiscal year 2000/01, Triaton's 2,500 employees will be generating a revenue of 360 mio. USD (planned). Triaton focuses on the following industries: automotive, chemicals, life science, manufacturing, metal/paper/wood, trading and utilities (see www.triaton.com).

price/earnings ratio, yield, EBITDA or dividends, which are often not available. So also other concepts like cash flow analysis, and Rappaports (Rappaport 1986) shareholder value network with drivers like value growth duration, operating profit margin, income tax rate, working capital investment, fixed capital investment and cost of capital are not applied due to a lack of required information. Future opportunities are uncertain, information overload and a hype make it difficult to identify the winners and the fundamental market value of an investment.

Financial institutions have been looking for other measurements in order to better assess New Economy investments (Weller 2000, Lacerra et al. 1999, Wishard/Loveland 2001). The new measures are time to profitability, net revenue, revenue streams and their development in time (Lacerra et al. 1999, 34). With the help of these measures a better estimation of New Economy investments can be achieved. But this approach still has one major limitation:

It requires a financial history and past data, or at least some peer group comparisons. It is often difficult, if not impossible to get the information needed concerning companies that are not publicly listed. If the data is accessible, this approach is a standardized process, which makes different companies easily comparable.

Partners and Partnering Strategy – New Entrants Approach

The partners of a company provide another indicator how successful a company might be. Partners contribute to reaching a critical mass in product and service offerings and allow to focus on the core competence (Evans/Wurster 1999). An organization having many partners seems to have a high networkability – a high ability to build and maintain relationships (Oesterle et. al 1999). Beyond the general partnering abilities like an existing partnering strategy and vision, specific factors like cultural fit, actual geographical orientation, the relation to existing partners, and product and service offerings determine the attractiveness of an organization to be considered as a partner. But often the intensity and success of the existing partnerships remains opaque to externals.

Deficits of These Approaches

The approaches above highlight only specific aspects of eMarkets from single perspectives. They are rarely targeted to address a specific role and cannot deliver the much needed information to base a decision on. Financial reports often only compare eMarkets on the basis of financial figures, which do not measure critical elements to assess the future potential. The assessments of the market researchers often lacks or only gives hints on the methodology used and if provided, they only cover the results, but not an interpretative way of making the assumptions and line of arguments explicit enough to meet the goals of credibility, transferability, dependability and confirmability (Lincoln/Guba 1985, 328). These goals and principles that assure the trustworthiness of research can only be met by assuming that the research institutions will provide internal standards that meet roughly these principles.³ Also, the approaches are not tailored to the decision process of the addressee. The actual strategy of the addressee does not influence the evaluation concept. Subsequent activities like a validation of results through interviews with analyzed eMarkets are not considered. Additionally, the schemes are not quantified or reduced to a single attribute to evaluate eMarkets. To summarize our critique:

- missing assessment criteria
- often missing research methodology
- not tailored to actual decision processes
- no flexibility to address the needs of specific roles

The quality of the decision and further use of the results of the evaluation is limited. To surmount those limitations, for a specific evaluation need, a clear concept of the need and evaluation procedure must be designed. Our recommendation is to derive the evaluation criteria from the customer's goals.

Approach to Select an eMarket in the Case of Triaton

³We accept the different purpose, audience and reading patterns of the customers of research institutions' reports, but we strongly object to use their "results", without deeper investigation on their internal procedures for producing their reports.

The approach taken originated in close collaboration with Triaton who defined the initial problem situation. Triaton GmbH was founded in autumn 2000 as the IT-Services company of the ThyssenKrupp AG. It is the result of the acquisition of HiServ GmbH, a former IT-Services Company of Aventis SA by ThyssenKrupp Informationssysteme (TKIS). Triaton positions itself as a global, full service IT service provider.⁴ Since both merged companies had a history of integrating ERP systems and first experience in electronic commerce, we guided the process of identifying new business opportunities.

One of the results was to offer technical integration services for trading partners that want to streamline their inter-organizational processes via eMarkets and to cover the role of an Integration Service Provider. In recent projects Triaton has developed competencies to integrate eMarket systems with ERP systems of trading partners. Triaton has defined the business model of one unit to focus on this area. One key challenge for Triaton is to identify promising eMarkets, where they can successfully take on the role of an integration services provider to eMarket trading partners and to the Market Maker.

In a first step, the general eMarket characteristics and the fundamental structure of the assessment have to be identified. Second, these general characteristics are adjusted to the specific context of the eMarket analysis by adjusting the weighting. Third, the possible answers have to be subjectively rated in a spectrum ranging from a desirable to an undesirable outcome. Fourth, the final eMarket evaluation creates an order an order of eMarkets according to their suitability to partner with (cf. Heinrich 1996, 163).

E-Market Assessment Characteristics

The detailed profile for an ideal eMarket is deduced from the opportunity to offer eMarket integration services to his eMarkets' customers. In order to build a solid evaluation basis to assess the development potential of eMarkets, we used Gaelweiler's cycle that highlights the interdependencies of strategic and operative management goals (Gaelweiler 1987, 24). This model suits well as basis to assess the economic viability and emphasizes the interdependencies of liquidity, revenue and the building of revenue potentials within time. By identifying criteria to measure liquidity, revenue streams, and their development, we managed to assess the future revenue generation and development potential of an eMarket.

Likewise, we used the four categories of the balanced scorecard to achieve a sound and complete coverage of the relevant areas to successfully manage a business and implement a targeted business model (Kaplan/Norton 1996, 8). We considered for example financial and non-financial criteria, internal criteria like business processes and external criteria like existing partnerships.

Another foundation for the design of the concept and the procedure to support the decision making process can be found in Simon's satisficing decision making model (cf Simon 1981). The satisficing ideas helps to design an approach that can be used, tested and reused in the business world. The rejection of the optimizing model was necessary, because of too many facets of the phenomena, the uncertainty and incompleteness of available information. The following design elements were applied to our approach:

- The problem defines the search for criteria and alternatives,
- The list of criteria and alternatives is likely to be far from exhaustive,
- The reviewer will limit the criteria
- The review of the alternatives will not be comprehensive

This input has been fully reflected as well as the use of hierarchy in the design of the criteria to manage the complexity of the assessment.

The models presented above were the basis to achieve a more complete coverage and satisfy the objectives. The problem and role specific sub-criteria are clustered in different dimensions and on different levels depending on their contribution to the size of the opportunity for Triaton. The three top dimension clusters are the need for integration, the openness for collaboration and the economic viability. Each of the dimensions comprises questions on two or three lower levels that constitute the dimensions. The dimensions cluster the different aspects to evaluate an eMarket. Some second-level questions are provided below:

Integration Need: The level of process and IT integration required by the customers of an eMarkets is a salient criteria for the business model of Triaton:

⁴In 2000 the 3000 employees have generated a revenue of nearly 500mio. USD. It focuses on the following industries: Steel/metal, automotive, engineering, manufacturing, industrial trading, pharma, agriculture, chemicals and other process industries (see www.triaton.com).

- Is there already an integration solution implemented, available or possible?
- Regarding the products and services offered via the eMarket, do they require a strong integration between suppliers and customers?
- Which processes of the eMarket are to be integrated with the trading partner’s internal processes?

Openness for Collaboration: This dimension potential of Triaton to partner with the eMarket:

- Which partnerships are already implemented?
- Which geographic focus is covered?
- Do the cultures of both companies fit together?
- Is the vision acceptable /compatible ?

Economic Viability: Out of an eMarket investors view the attractiveness of a financial investment in the eMarket has to be analyzed:

- What is the potential of the eMarkets?
- What is the actual liquidity of the eMarket?
- What is the actual success/profit of the eMarket?

These three categories and ten subcategories were broken down into to a total of 135 criteria, providing a clear profile of an eMarket. An excerpt of the dimension "economic viability" is shown below:

Table 1. Profile of an E-Market

Economic Viability		Criteria	Possible Entries
Success	Neutrality	State of control	Investor-driven, buyer-driven, seller-driven, technology provider driven, consultant driven
		Business Model	Coverage of value chain (roles)
	Market form		One-to-one (1:1), one-to-many (1:m), few-to-one-to-many (few:1:m), many-to-many (m:m), many-to-one-to-many (n:1:m), many-to-one-to-few (n:1:few), many-to-few (n:few), many-to-one(n:1), or or many-to-many(n:m) orientation
	Strategic fit of their business model with Triaton’s		Low, middle, high
	Revenue generation		Advertising, transactions, subscription fees, information
	Incentives for customers	Existing/not existing	

According to these dimensions the best suitable eMarket would have many customers and transactions resulting in a high need for integration service solution and no partner yet providing a technology and services close to Triaton’s capabilities.

Process of Assessing E-Markets

The process of assessing eMarkets started with the refinement of the criteria based on the underlying models and experiences. After defining the basic framework and enriching it with criteria to measure eMarket success from the academic literature and press on a more detailed level we conducted a workshop to elaborate those and integrate the input from Triaton experts. The moderated sessions with Triaton confirmed the top-level criteria and helped to detail the detailed second level criteria.

Criteria Weighting

The selected criteria must be weighted to adjust the profile since the criteria do not have all the same influence on the opportunity for Triaton. Starting with the three dimensions, each subsequent level was weighted individually in a workshop.

We weighted the criteria before starting the data gathering since the probability that information of all 135 criteria is available online is very small. By weighting 14 of the 135 criteria got a weight of zero, so that the subsequent data gathering could be more efficient. In the case of Triaton, the first analysis was conducted through Internet research on the requested information. In a second step the analysis results would be completed by direct contact to selected eMarkets. The data gathering showed to be the most difficult challenge, as not all information was available.

Rating of Criteria

After having collected the eMarket data, all answers were rated. Each possible answer was evaluated from Triaton's point of view. We conducted a workshop to rate the criteria.

Creating of an Order

By multiplying the weight of criteria with the rating of the criteria and building the sum for each eMarket, a single value could be calculated. This value served as a basis to build an order. In the case of Triaton the procedure identified four eMarkets worthwhile to start a cooperation with. They were selected to be contacted and analyzed in more detail.

Lessons Learned and Critical Success Factors from Using the Concept and Procedure

We successfully applied the concept to a real life situation. The evaluation process gained transparency. The order of eMarkets could be explained by displaying the underlying data, ratings and weights. The criteria and weights were derived from the companies' strategy. The concept has helped to reach credibility, transferability, dependability and confirmability. Essential for the success was the close link of the evaluation concept to the strategic requirements. The criteria were set in an cause-and-effect relationship with the goal of having a big opportunity by cooperating with an eMarket. This also contributed to increase the transparency that was inherent to the whole procedure. The early weighting before starting the data gathering helped to improve the efficiency of the process. At the end the selected eMarkets were widely accepted as suitable to support Triaton's strategy. Only the content of the evaluation (e.g. the criteria, weight and rating) was specific to their role they take on for eMarkets.

Outlook

We have proposed some motivations, a concept, and a procedure to analyze the potential to partner with an eMarket. To do that, we have presented a role model for eMarkets and adapted it to for a specific business need of a study partner. Starting from the business model of the systems integrator Triaton targeted at providing systems integration services for eMarkets, we have analyzed several eMarket ecosystems in terms of risk and viability of the market, cooperation practices and need for integration. Some of the lower rated potential partners are closing down their operations (e.g. chemdex). Therefore the approach taken has potentially saved resources that would have been dedicated to provide solutions of eMarkets that are no more operational.

On the basis of these results Triaton can use the concept and procedures for future analysis. Also, companies who want to compete in similar fields of systems integration, may be able to make better decisions, if they use such an approach. Due to its hierarchical and modular structure the evaluation method is adaptable for future deviations of Triaton's business model that might require different kinds of eMarket to partner with. Also, if the concept of eMarkets evolves the scoring model can easily be adapted. Next to the direct benefits from taking this approach the company also benefited from the structured information gathering of the employees about their future business area and possible competitors.

Further research could use the approach and extend it for roles, where the top criteria integration need might not be the most applicable. For example, a Content Provider may want to have a stronger industry and process focus defined by his content. An additional outlook is to detail the cost of partnering within an eMarket ecosystem by closely analyzing the ability to cooperate with partners via electronic means (networkability).

We believe that this practice proven approach helps to understand and assess the complex ecosystems that evolve around eMarkets. Based on a companies own business model it can be used to assess the viability of partners within a whole business system to manage the increasingly independent future of networked companies.

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