

Competitive advantage in the ERP system's value-chain and its influence on future development

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Using the resource-based view, we present a set of propositions related to enterprise resource planning (ERP) development, reflections on competitive advantage and the different roles that stakeholders play in the value-chain. This has the goal of building a foundation for future research on ERPs and how stakeholders' desire to achieve competitive advantage influence ERP development, especially when it comes to development of a more standardised or pre-customised ERP system. The propositions also act as a foundation for increasing our knowledge concerning the difficulty in developing improved ERP systems.

Keywords: competitive advantage; enterprise resource planning (ERP); ERP development; resource-based view; value chain

1. Introduction

The paper uses the resource-based view of the firm (Barney 1991, Peteraf and Barney 2003, Wernerfelt 1984) to describe and explain how organisations, having different roles in the value-chain in an enterprise resource planning (ERP) system development/implementation project, think about competitive advantage and how this influences ERP development. In the value-chain for developing ERPs there are, at least, the following three stakeholders: ERP software vendors, ERP resellers/distributors and ERP end-user organisations. We suggest that these stakeholders have different approaches to gaining competitive advantage and that they influence how ERP systems are improved. A critical question then is to define competitive advantage as well as what it is that gives the stakeholders in the ERP system's value-chain a competitive advantage. This discussion relates to the on-going discussion about how organisations receive competitive advantage from information and communication technology (ICT) (Carr 2003, 2004, Mata *et al.* 1995, Smith and Fingar 2003), and one theoretical base used for describing this is the resource-based view of the firm. The resource-based view asserts that organisations gain and sustain competitive advantage from valuable resources that are inelastic in supply (Ray *et al.* 2004). In this way, the resource-based view is closely related to core competence, as described by Javidan (1998). Another area related to competitive advantage and

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ERP that has been in focus and discussed frequently is the question of finding the 'right' enterprise resource planning (ERP) system or, in other words, finding an ERP system that fits the organisation and its business processes (Karimi *et al.* 2007, Luo and Strong 2004, Rolland and Prakash 2000, Sleeper 2004, Soh *et al.* 2000). The way ERP end-user organisations have solved this problem has, to a great extent, been through customisation of a standard ERP system (Ashley 2005). This customisation can be said to be in conflict with the initial principles of ERPs and what ERPs' goals are. One of the basic principles of ERPs is that these should be standardised systems (Melin 2003). Light (2005) claims that the common view, at least from the vendors' perspective, is that ERPs are most successfully implemented when the standard model is adopted. Somers and Nelson (2004) propose three major business drivers for adoption of ERPs: improving productivity, providing competitive advantage, and satisfying customer demands. Wier *et al.* (2007) claim that the purpose of ERPs is to support business process improvements. This suggests that customisation of an ERP aims at creating and adopting an ERP that fits the end-user organisation's specific business processes, thereby maintaining or increasing its competitive advantage when compared with its rival firms. The research question asked is: what are the beliefs that different stakeholders in the value-chain for ERP development have about competitive advantage, and how do these beliefs influence future developments of the ERP?

In this paper, we develop a set of propositions related to ERP development and competitive advantage and the roles that the different stakeholders play in the value-chain. These propositions have the ambition of acting as a foundation for future research on the development and implementation of ERPs and how different stakeholder thoughts regarding competitive advantage influence ERP development, especially when it comes to the development of a more standardised ERP system. The propositions also act as a foundation for increasing our knowledge about the difficulties in developing future ERP systems.

The rest of the paper is structured as follows. Section 2 describes the ERP development value-chain and the stakeholders involved. It also elaborates what competitive advantage consists of for these stakeholders and provides suggestions about their thoughts regarding competitive advantage derived from ERPs. This is followed by Section 3 which defines ERPs and reports findings about ERP and competitive advantage. Section 4 presents the resource-based view of the firm and the value, rareness, imitability and organisation (VRIO) framework, and gives a definition of competitive advantage. Section 5 then uses the resource-based view to discuss ERP development and competitive advantage. Finally, Section 6 describes a set of propositions that concludes the discussion and can be seen as offering a direction for future research about competitive advantage and ERPs related to stakeholders in the ERP development chain.

2. The ERP value-chain and its stakeholders

Development of ERPs can be described as a value-chain consisting of different stakeholders, as shown in Figure 1. An ERP value-chain can be described as the ERP business model having at least three different stakeholders: ERP software vendors, ERP resellers/distributors, and ERP end-user organisations (or ERP customers). This is an indirect sales model. An alternative to this is the direct sales model using only two stakeholders. However, in this paper we focus on the indirect

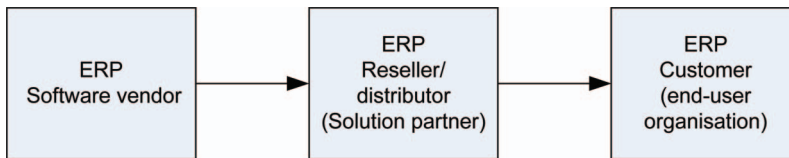


Figure 1. Stakeholders in the ERP value-chain.

sales model. It can be said that all stakeholders in the value-chain, to some extent, develop the ERP further from its original form or core. The software vendors develop the core of the system that they then 'sell' to their partners that act as resellers or distributors of the specific ERP. These partners quite often make changes to the system or develop what could be labelled as add-ons to the ERP core. These changes or add-ons are then implemented in order to customise the ERP for a specific customer. In some cases also the customer develops the ERP system further either by configuration or customisation. At this stage of the value-chain it can be argued that the 'original' ERP system could have changed dramatically from its basic design. This ERP development value-chain may result in the ERP software vendors not having as close a connection to the end-user that they would prefer and do not always understand what functionalities are added to the end-users' specific ERP systems.

The stakeholders in the ERP value-chain have different roles; accordingly, they have different views of competitive advantage gained from ERPs. One way of describing this could be to use the resource-based view discussed as a core competence (Javidan 1998). Developing ERPs are the ERP software vendors' core competence. The ERP reseller/distributors' core competence should also be closely related to ERPs, but it is unclear that development should be their core competency. Their core competence could or should be implementing ERPs. However, this probably varies between ERP resellers/distributors; for some it could be the development of add-ons that constitute their ERP core competence. When it comes to end-user organisations, it can be said that ERP development definitely does not constitute their core competence. However, they are, directly or indirectly, involved in the ERP development value-chain.

One reason why end-user organisations get involved in ERP development is that they probably want to adjust their ERPs so that it supports their core competence related to their business. This means that implementation is of importance and thereby ERP resellers/distributors play a crucial role.

Beard and Sumner (2004) investigate whether a common systems approach for implementing ERPs can provide a competitive advantage. The focus of their research was to investigate what happens when a variety of firms within the same industry adopt the same system and employ almost identical business processes. They concluded that ERPs are increasingly a requirement for staying competitive (i.e. competitive parity), and that ERPs can yield at most a temporary competitive advantage. From this it can be suggested that the ERP end-user organisations want a 'cheap' system that they can use to improve their business processes, thereby making a difference compared with other organisations in the same industry. But, since ERPs force organisations to implement standardised business processes (so-called 'best practice'; Wagner and Newell 2004), it could be that the organisations get locked in by the usage of the system and then, depending on whether they are a first mover or not, they receive only a temporary competitive advantage. This implies that

the ERP end-user organisation often implements an ERP with the objective of having a 'unique' ERP system. But does the ERP customer actually want a unique ERP system or not? Assuming that the customer believes they have a unique business model, it follows that it would probably want a unique ERP system. However, it is important to remember that they probably want a system with high interoperability internally, as well as one which links with external organisations' systems. This means that the basic thoughts that are intrinsic in ERPs are attractive to ERP end-user organisations. At the same time, it is possible that the end-user organisations also want a system that is not the same as their competitors. This is then congruent with what the ERP resellers/distributors want. They receive their competitive advantage by offering customers the knowledge of how to customise an ERP using industries' best practices and, at the same time, how to implement functionality that differentiates their ERP system from their competitors' uses.

Mata *et al.* (1995) developed Figure 2, using Barney's (1991) claims about competitive advantage and ICT in general. The framework has been used extensively by, for instance, Kalling (1999), Beard and Sumner (2004), Lengnick-Hall *et al.* (2004) and Fosser *et al.* (2008a). What the research implies is that competitive advantage can be difficult but not impossible to achieve because the resource is difficult to reproduce (e.g. the role of history; causal ambiguity; social complexity). As described by Fosser *et al.* (2008a), the real value is not the ICT in itself, but the way the managers exploit it. We will describe this in more depth in relation to ERP in Section 4 when we describe the resource-based view of the firm and the value, rareness, imitability and organisation (VRIO) framework.

Quinn and Hilmer (1994) argue that organisations can increase the competitive advantage by concentrating on resources which provide unique value for their customers. Based on the discussion above and the statement made by Quinn and Hilmer (1994), we have constructed Table 1 to show what the competitive advantage is and how it is gained by the different stakeholders in the ERP development value-chain.

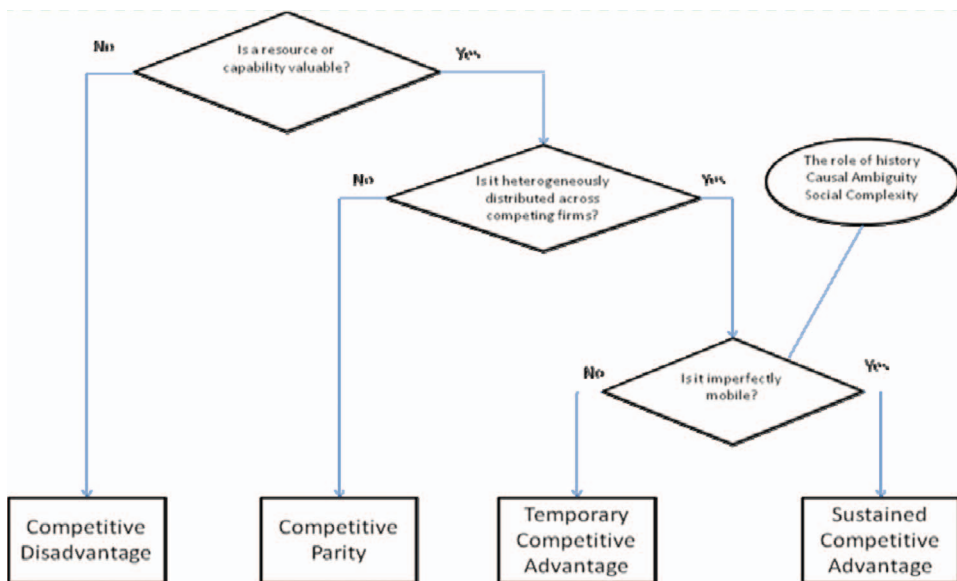


Figure 2. Resource-based model of competitive advantage (after Mata *et al.* 1995).

Table 1. ERP value-chain stakeholders and competitive advantage.

Stakeholder	Competitive advantage	Gained through:
ERP software vendors	High level of market share in the ERP market (e.g. the number software licenses sold)	Competitively priced software Highly flexible software Ease of implementing the software Ease of customising the software
ERP resellers/distributors	High level of market share in the ERP consultancy market (e.g. consultancy hours delivered)	Knowledge about the customer's business High level of competence in development of add-ons that are seen as attractive by the ERP end-user organisation High level of competence at customisation
ERP end-user organisations	High level of market share in the customer-specific market (e.g. products or services sold; rising market share; lower costs)	Being competitive in its market Implementing an ERP system that supports its business processes Implementing an ERP system that is difficult for competitors to reproduce

Levina and Ross (2003) describe the value proposition in outsourcing from a vendor's perspective. They claim that the value derived from vendors is based on their ability to develop complementary core competencies. From an ERP perspective, we suggest that vendors, as well as distributors (Figure 1), provide value by delivering complementary core competencies to their customers.

When looking at the market share between the three different stakeholders in the ERP value-chain, it can be proposed that there are no direct conflicts amongst stakeholders in what assists the respective stakeholder in gaining competitive advantage. The reason is that they all work in different markets and with different customers. Consequently they do not compete with one other. In reality, they have each other as customers and/or providers, as described in Figure 1. For example, further development of ERPs carried out by vendors could result in a higher degree of selling directly to end-customers or other ways of delivering ERPs to end-customers. At the extreme, the partners would be driven to insolvency and replaced by, for instance, application service provision (ASP) (Bryson and Sullivan 2003) or software as a service – SaaS (Jacobs 2005). The first step in this direction is probably that more of the add-ons that partners deliver to end-customers are incorporated in the core product. It can thus be concluded that there appears to be a conflict between the different parties in the value-chain when it comes to how different stakeholders think they gain competitive advantage and how that influences future ERP development. To develop this proposition, the next section describes ERPs and provides findings regarding competitive advantage from ERPs.

3. ERPs and competitive advantage from ERPs

Enterprise resource planning (ERP) systems had their introduction in the 1950s and 1960s when computers were introduced into organisations (Møller 2005). ERPs are often defined as standardised packaged software designed with the aim of integrating

the entire value-chain in an organisation (Lengnick-Hall *et al.* 2004, Rolland and Prakash 2000). Wier *et al.* (2007) argue that ERPs aim at integrating business processes and ICT into a synchronised suite of procedures, applications and metrics which transcend organisational boundaries. Kumar and van Hillegersberg (2000) claim that ERPs that originated in the manufacturing industry were the first generation of ERPs. According to the authors, development of these first generation ERPs was an inside-out process proceeding from standard inventory control (IC) packages, to material requirements planning (MRP), material resources planning (MRP II) and then eventually expanding it to a software package that aims to support the entire organisation (second generation ERPs). This evolved software package is then described as the next generation ERP labelled as ERP II which, according to Møller (2005), could be described as the next generation enterprise systems (ES).

This development has increased the complexity not only of usage, but also in the development of ERPs. The complexity comes from the fact that ERPs are systems that are supposed to integrate the organisation (both inter-organisationally as well as intra-organisationally) and its business process into a one package (Koch 2001). It can be assumed that ERPs as well as how organisations use ERPs have evolved (Botta-Genoulaz and Millet 2006). These changes have created the renewed interest in developing and selling ERPs. Thus, the ERP market is a market in flux. This impacts not only the level of stakeholder involvement in an ERP value-chain (Ifinedo and Nahar 2007, Somers and Nelson 2004), but also how these different stakeholders gain competitive advantage from developing, selling, or using ERPs. It is clear that an organisation no longer achieves competitive advantage just by implementing an ERP (Karimi *et al.* 2007, Kocakulah *et al.* 2006). Fosser *et al.* (2008b) present some findings that support this and at the same time show that for some organisations there is a need for implementing an ERP system for at least achieving competitive parity. They also state that the way configuration and implementation is accomplished can influence the possibility to gain competitive advantage from an ERP system, and that an inability to exploit the ERP system can bring competitive disadvantage. This is in line with the assumption from the resource-based view that it is the utilisation of resources that makes organisations competitive (Mata *et al.* 1995). In this context, it means that ERP software vendors become competitive if they utilise their resources to develop ERPs that are attractive to their potential customers. ERP resellers/distributors need to utilise their resources to become attractive partners when implementing ERPs. Further, ERP end-users need to utilise the ERP system so that it supports their business. In other words, it is how end-user organisations use the ERP that is of importance, and it could be that having a unique ERP system (Table 1) is not that important. It may be that ERP end-user organisations think it is more important than it actually is.

Millman (2004) posit that ERPs are the most expensive but least-value-derived implementation of ICT support. The reason for this, according to Millman, is that a lot of ERPs' functionality is either not used or is implemented in the wrong way. That it is wrongly implemented results from ERPs being customised to fit the business processes, instead of changing the process so that it fits the ERP (Millman 2004). According to Light (2005), there are more reasons for customisation than just the need for achieving a functionality fit between the ERP and the organisation's business processes. He believes that from the vendors' perspective, customisations might be seen as fuelling the development process. From the end-users' perspective,

Light describes customisation as a value-added process that increases the system's acceptability and efficiency. Light further reasons that customisation might occur as a form of resistance or protection against implementation of a business process that could be described as 'best practices'.

Mata *et al.* (1995) suggest that just implementing ERPs hardly gives any competitive advantage at all. One reason for this could be that the number of organisations that have implemented ERPs has exploded. Shehab *et al.* (2004) claim that the price of entry for running a business is to implement an ERP, and they purport that it can be a competitive disadvantage not to implement an ERP system. Beard and Sumner (2004) argue, based on evidence collected in prior studies, that through a reduction of costs or by increasing an organisation's revenue, ERPs may not directly provide organisations with competitive advantage. Instead, they suggest that cited advantages could be largely described as value adding through an increase of information, faster processing, more timely and accurate transactions, and better decision-making. From this it follows that the resource-based view of firms would be interesting to use when explaining competitive advantage in relation to future development of ERPs.

The next section expands upon how the different stakeholder thoughts in the value-chain of ERP development about competitive advantage influence the development using the resource-based view.

4. The resource-based view and the VRIO framework

The resource-based view of the firm describes an organisation as a collection of productive resources with the central assumption that organisations gain competitive advantage through their internal resources (Peteraf and Barney 2003). The core issue in the resource-based view is how to identify and exploit existing resources more effectively in the organisation (Hedman and Kalling 2002). Connor (1991) proposes that the resource-based view is a strategic management approach that focuses on resource allocation and emphasises economic performance and competitive advantage in markets. This is also confirmed by Hedman and Kalling (2003), adding that the resource-based view is part of strategy theory and, as such, deals with explanations of firm performance in a competitive environment.

The resource-based view focuses on resources and capabilities and the linkage between resources and capabilities in order to underlie persistent performance; it also deals with the way in which organisations differ from one other when it comes to performance. Persistently high levels of performance are described by Peteraf and Barney (2003) as a sustained competitive advantage. Noteworthy in the resource-based view is that it builds on assumptions about competitive advantage and heterogeneity of resources. The basic assumption is that the heterogeneity of resources makes it possible to have competitive advantage. Johnson *et al.* (2003) argue that since the economic environment is moving rapidly towards open markets, resources are increasingly tradable, and that protection from market entry and strategic imitation is declining. They suggest that from the resource-based view, sustainable advantage must lie in micro assets that are hard to discern and awkward to trade.

Barney (1991) proposes that in order to avoid confusion about basic assumptions in the resource-based view, there are three concepts that need to be defined: resources, competitive advantage and sustained competitive advantage. For ease of

understanding the definition of these concepts, the resource-based framework, as presented by Barney (1991), is shown in Figure 3.

In Figure 3 the assumptions of heterogeneity and immobility about resources and the relationship to having sustainable competitive advantage are shown on the left side. The resource-based view suggests that resources have the possibility to sustain heterogeneity and also that they can be immobile. These assumptions are connected to four attributes of resources: value, rareness, imperfect imitability and substitutability. The model suggests an important distinction in the resource-based view, that if a resource is to provide organisations with sustained competitive advantage, there are different attributes for the resources that have to be fulfilled. According to Hedman and Kalling (2002), there are numerous resource attributes described in the resource-based view literature that give a firm its competitive advantage. Barney (1991, 2002), Cheon *et al.* (1995), and Hedman and Kalling (2002) identify the following four attributes as relevant: valuable, rare, costly to imitate, and efficiently organised. These attributes constitute the basis of the VRIO framework described in Table 2, which shows that if certain criteria of the resource attributes are fulfilled, it is possible for organisations to retain control over their resources, and thus enjoy sustained competitive advantage. But this depends to a high degree on how resources are organised, as shown in the VRIO framework (Barney and Wright 1998).

The intention of the VRIO framework (value, rareness, imitability and organisation) is to identify which resources do or do not provide sustained

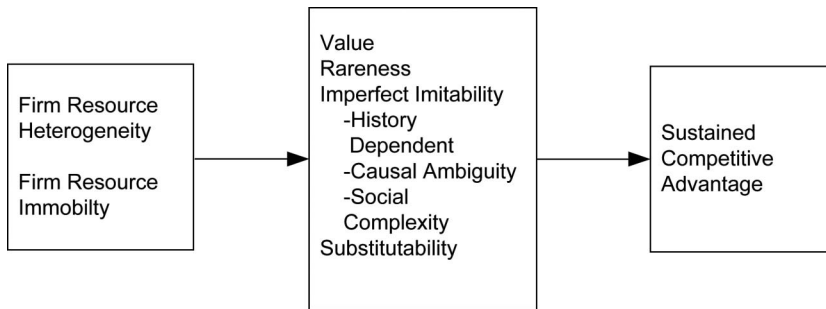


Figure 3. The relationship between resource heterogeneity and immobility, and sustained competitive advantage (Barney 1991).

Table 2. The VRIO framework (Barney 2002).

Is a resource or capability ...					
Valuable?	Rare?	Costly to imitate?	Exploited by organisation?	Competitive implications	Economic performance
No	–	–	No	Competitive disadvantage	Below normal
Yes	No	–	↑	Competitive parity	Normal
Yes	Yes	No		Temporary competitive advantage	Above normal
Yes	Yes	Yes	↓	Sustained competitive advantage	Above normal
			Yes		

competitive advantage. The VRIO framework aims at identifying resources with the potential for having sustained competitive advantage by answering the questions about resources or capabilities. If all answers are in the affirmative, the specific resource has the potential to deliver sustained competitive advantage to the organisation. However, to do that, the resource has to be efficient and effectively organised. Barney (2002) describes this as exploiting the resource.

According to Barney (1991), a resource is valuable if it enables the organisation to implement strategies that improve its efficiency and effectiveness. The statement that Barney (1991) makes somewhat contradicts this. He equates a resource with value. The first question related to the value of the resource seems to be meaningless if the basic assumption is that the resource has to be valuable if it is to be deemed a resource. Barney and Wright (1998) claimed that value is created by either decreasing the costs for producing the products, or the services, or by having the possibility of increasing the price for its products or services. This is very much in line with the basic value-chain thoughts as described by Porter (1985).

Rareness is defined as scarcity of resources by Barney (2002). Rareness is not sufficient for a specific resource to deliver competitive advantage. According to Peteraf and Barney (2003), the cost of using that specific resource could be so high that the costs exceed the potential benefits. It is also possible that the specific resource could be used in another context that provides the organisation with a higher net benefit. This is described by Peteraf and Barney as the resource having a higher opportunity cost of being employed in different contexts. This suggests that the level of rareness that a valuable resource needs to have in order to provide organisations with competitive advantage could vary between situations (Barney 2002). Thus, when it comes to rarity, if a specific resource is not rare, it cannot provide the organisation with sustained competitive advantage. But, it can provide the organisation with competitive disadvantage if the organisation chooses not to use that specific resource when the organisation's competitors use that resource. ERP usage is probably one occasion where this could happen. Web-sites for organisations could exemplify this, as having a web-site does not always give competitive advantage but it could do. On the other hand, not having a web-site could provide the organisation with a disadvantage since most organisations have a web-site. The same could probably be claimed for ERPs.

If a resource is found to be valuable and rare, it is not evident that it provides sustainable competitive advantage. According to the VRIO framework, the resource could be said to deliver temporarily competitive advantage. To deliver sustained competitive advantage, the resource needs to have the attribute of being difficult to imitate. Barney (2002) describes two different ways for an organisation to imitate resources: duplication or substitution. (It is a little unclear whether Barney means the imitation of usage of resources or strictly imitation of the resources as such.) Duplication means that the organisation uses the same 'type' of resource in the same way. Whether the organisation will be successful or not depends on the cost of duplication, meaning that if the cost for duplication is higher than the potential benefits from usage of that specific resource, the competitive advantage will be 'wiped out'. The competitive advantage for the organisation that first implemented the resource will thereby be sustained. In the opposite case, if the development of the resource is more costly than duplication the competitive advantage will be temporary. The other way of imitating a resource is by substituting the resource with another 'type' of resource. This happens when it is too costly to imitate by duplication. Substituting

means that a resource is used as a replacement of other resources that competing organisations use and have control over. This means that if a substitute exists and is also not too costly to obtain, then the competitive advantage will only be temporary. In the ERP case the example of open source ERPs could be said to describe this to a large extent. It could also be that organisations instead of implementing an ERP software package may implement specific software for a specific function.

However, the discussion above regarding competitive advantage depends to a great extent on how competitive advantage is defined. A common definition of competitive advantage is that it is a superior financial performance in a given market, implying that organisations that have above-normal returns also have competitive advantage. The definition that Peteraf and Barney provide is as follows:

An enterprise has a competitive advantage if it is able to create more economic value than the marginal (breakeven) competitor in its product market.

align = (Peteraf and Barney 2003)

The concept of competitive advantage also needs to be understood from the perspective of sustainability. Understanding sources of sustained competitive advantage is, according to Barney (1991), a major area in strategic management research. A common approach is to use the strengths, weakness, opportunities and threats (SWOT) framework. There are, according to Barney, two assumptions in the SWOT framework that are important to take into account when using it for analysing competitive advantage. First, it suggests that all organisations within the same area are identical when it comes to the strategic resources that they have and can control, as well as which strategies they practise. Second, it suggests that if resource heterogeneity is developed, that heterogeneity will be short lived because resources are highly mobile. However, if we analyse these assumptions and findings according to the resource-based view, even if the organisations are identical and that the specific resource is highly mobile they can show difference in competitive advantage.

Relating this to ERPs and ERP development, we will now look into ERP and competitive advantage seen from the resource-based view.

5. ERP and competitive advantage seen from the resource-based view

As Mata *et al.* (1995) and Kalling (1999) claim, whether an organisation gains competitive advantage from software applications depends on how these resources are managed. The conclusion Mata *et al.* (1995) draw is that among attributes related to software applications – capital requirements, proprietary technology, technical skills, and managerial software applications skills – it is only the managerial software application skills that can provide sustainability of competitive advantage. Barney (1991) concludes that sources of sustained competitive advantage are and must be focused on the heterogeneity and immobility of resources. This conclusion is made from the assumption that if a resource is evenly distributed across competing organisations and if the resource is highly mobile, the resource does produce sustained competitive advantage.

The evolution of ERPs has made these resources easier to imitate; however, a major hindrance to imitation is the likely cost of implementation. This discussion can be compared to Carr's (2004) assertions about receiving competitive advantage by software applications.

The resource-based view says that a resource has to be rare if it is able to provide competitive advantage. In the case of ERPs, it could be said that this kind of resource is not rare. There are a lot of different possibilities for organisations to implement ERPs, and the evolution of ICT has made it more feasible for more organisations to implement ERPs, that is, by decreasing the costs of usage of ERPs. However, as described by Barney (2002) and Shehab *et al.* (2004), not implementing an ERP can also lead to an organisation suffering competitive disadvantages.

Kalling (1999) suggests that the literature on resource protection focuses, to a large extent, on imitation, trade and substitution. He proposes that development of a resource can also be seen as a protection of the resource. Referring to Liebeskind (1996), Kalling posits that the ability to protect and retain resources arises from the fact that resources are asymmetrically distributed among competitors. The problem, according to Kalling, is how to protect more intangible resources such as knowledge. Relating this to ERPs, it follows that knowledge about a specific deployment of an ERP would be hard to protect by legal means, such as contracts. Another way of protecting resources is, as described by Kalling, to 'protect by development'. This means that an organisation protects existing resources by developing the resources in a way that flexibility is increased by adjusting and managing present resources. In the ERP case this could be described as customisation of the existing ERP, thereby sustaining the competitive advantage gained from usage of the ERP. Kalling describes this as a way of extending a time advantage for competitive advantage. From the different ERP stakeholders' perspectives, it could be suggested that both protection by development, as well as trying to increase the time advantage, influences the development of ERPs.

Whether an organisation has competitive advantage or not from an ERP system can, to a great extent, be said to depend on how we define competitive advantage. There are many different definitions of competitive advantage; however, a basic definition is that the organisation achieves (as previously described) above normal economic performance. If this situation is maintained, the competitive advantage is deemed to be sustained. There are some conflicts between attributes for gaining competitive advantage, such as developing 'cheap' software with high flexibility and developing software that is easy to customise or to gain competitive advantage by developing exclusive add-ons.

If the organisation is a first mover in the sense that it is the first organisation that uses this type of resource in a specific way, it can quite easily gain competitive advantage, but it will probably be short lived. The length of time that the competitive advantage lasts is a question of how hard it is for others to imitate the usage of that resource. This means that the question of how resources are exploited by the organisation is the main factor when it comes to whether the competitive advantage becomes sustainable or not. When it comes to development of ERPs, the conclusion is that exploitation by organisations should be seen in terms of how resources are organised and how governance and/or control over ERP development, implementation, and usage are effective.

6. Concluding propositions

In the introduction of the paper the question of what 'competitive advantage' means was asked. It was suggested that it is crucial to define competitive advantage as well

as what it is that gives the stakeholders in the ERP system's value-chain competitive advantage and how they gain or could gain competitive advantage. In the paper we define competitive advantage and explain it from the vendor, reseller and end-user perspective. We also describe thoughts different stakeholders have about competitive advantage in relation to the ERP value-chain. From the end-user perspective, competitive advantage gained from ERPs could be described as the ERP having the potential to deliver competitive advantage if the end-user's business processes are supported in such a way that they deliver increased performance. From the vendors', as well as the resellers' perspectives, the ERP delivers competitive advantage when they attract new customers or retain the old ones. This implies conflicts between vendors and resellers when it comes to competitive advantage and development of future ERPs. This can be explained by realising that ERP resellers/distributors often develop add-ons which have a specific functionality solving a specific problem for their customer. This can be seen as one way of customisation, where resellers/distributors use their knowledge about the customer's industry in addition to their knowledge about the specific customer. This, in effect, allows resellers to increase their competitive advantage and earn more money. Another way is for resellers to sell the add-on to other resellers resulting in the resellers decreasing their competitive advantage in the long run. It may be that the resellers who sell their add-ons solution to other resellers would not see it as influencing their competitive advantage, since they sell the add-on to customers already using the same ERP system and this would not make ERP end-user organisations change resellers. However, the question remains whether the same would apply if the resellers sold the add-on to the software vendor. The answer would depend on the incentives that the resellers had for doing that. The risk of selling the add-on to the software vendor would be that it thereby would directly influence the customer base the reseller had. If the add-on were to be implemented in the basic software (core), the possibility of selling the add-on to end-user organisations, as well as to other resellers, would disappear.

Competitive advantage of ERPs would probably be wiped out by duplication as well as by substitution. If, for instance, the ERP resellers sold their add-on to the ERP software vendor, the duplication of that add-on would be quicker, and the competitive advantage that the ERP reseller had on being the one that delivered this add-on would be wiped out. However, if they kept the add-on as 'their' solution, other ERP resellers or the ERP software vendors would probably substitute the add-on. One way for the resellers to earn some fees from the add-on would be to sell it to other resellers.

We conclude the discussion with the following propositions:

Proposition 1: Both resellers and end-users (encouraged by resellers) in the ERP value-chain see customisation as a way of achieving competitive advantage. This results in resistance to providing software vendors with the information necessary for them to develop ERPs further in the direction of standardisation, thereby decreasing the resellers' need to customise the system.

Proposition 2: The conflict between different parties in the ERP value-chain and how they think they will gain competitive advantage decreases the feedback in the ERP value-chain. This tends to increase the cost for both development as well as maintenance of ERP systems.

The reasons for the cost for development and maintenance as being unnecessarily high can be described as:

Proposition 3: End-users of ERPs and their basic assumption about how they receive competitive advantage are encouraged by resellers of ERPs. Resellers want to sustain their competitive advantage by suggesting and delivering high levels of ERP customisation.

This can also be described as:

Proposition 4: The ERP end-users want to make sure that they can compete on its market and they think having a unique ERP system will provide them with the possibility to gain competitive advantage. The resellers support this idea with offering unique adjustments to the standard software package – the ERP system. The resellers also see this as a way of increasing their own competitive advantage.

The main conclusion can be formulated as the following proposition:

Proposition 5: The basic thoughts the different stakeholders in the ERP value-chain have about competitive advantage is that highly customised ERPs deliver better opportunities for competitive advantage for the delivering reseller in the ERP value-chain as well as for the ERP end-user organisations while it decreases the opportunity for ERP software vendors to attain competitive advantage.

The discussion and propositions suggest that decision-makers in organisations and their thoughts regarding how to gain and sustain competitive advantage by customisation of ERPs are a major hindrance for development of future ERPs. This conclusion emanates from the assumption that organisations protect what customisation they have made as well as why they have customised their ERPs. The reason for this is based on their belief that they will thereby sustain competitive advantage gained by developing, selling or using customised ERPs. However, returning to Table 1 and the suggestion on what it is that constitutes competitive advantage for the different stakeholders, it can be concluded that there are some generic influencing factors. The conflicting goals of the three parties in the ERP value-chain increase the complexity of the market place. From a resource-based view perspective it can be said that first mover advantage could be seen as something that influences all stakeholders and their possibility to gain and to some extent sustain competitive advantage. The same could also be said about speed of implementation and, for instance, at what speed changes by the ERP vendor are implemented in the core product, as well as in what speed new add-ons are developed and implemented by the reseller, but also the speed of implementing new versions of the ERP by the end-user. The main conclusion is that even if the role of history, causal ambiguity and social complexity influences organisations' possibility to gain competitive advantage, the management skills that the organisations have seems to be most important. However, independent of that it can be claimed that the assumptions of stakeholders in the ERP value-chain about competitive advantage influence development of future ERP systems. In the future we will be exploring the above propositions using evidence from case studies of the three stakeholders and their relationships with special reference to the inherent conflicts in the value chain.

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