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Article

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Cogent Business & Management

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Suggested Citation: Esho, Ebes; Verhoef, Grietjie (2020) : A holistic model of human capital for value creation and superior firm performance: The Strategic factor market model, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 7, Iss. 1, pp. 1-17, <https://doi.org/10.1080/23311975.2020.1728998>

This Version is available at:

<https://hdl.handle.net/10419/244799>

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To cite this article: Ebes Esho & Grietjie Verhoef | (2020) A holistic model of human capital for value creation and superior firm performance: The Strategic factor market model, Cogent Business & Management, 7:1, 1728998, DOI: [10.1080/23311975.2020.1728998](https://doi.org/10.1080/23311975.2020.1728998)

To link to this article: <https://doi.org/10.1080/23311975.2020.1728998>



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Received: 31 October 2019
Accepted: 29 January 2020

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Reviewing editor:
Hung-Che Wu, Business School,
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MANAGEMENT | RESEARCH ARTICLE

A holistic model of human capital for value creation and superior firm performance: The Strategic factor market model

Ebes Esho^{1*} and Grietjie Verhoef¹

Abstract: Understanding the link between human capital, competitive advantage and firm performance is a major focus of research in strategic human capital studies in strategic management and Strategic Human Resource Management (SHRM). Indeed, much progress has been made in understanding this link. However, strategy scholars have emphasized firm-specific human capital as the most strategic form of human capital, and mobility constraints as the route to human capital-based competitive advantage and superior performance. SHRM, on the other hand, have been primarily focused on human resource policies, practices and systems, and more recently on the ability, motivation, and opportunity framework. Consequently, there has been an implicit assumption that there is already an understanding of how human capital actually creates value in firms. This article presents a succinct review of extant studies and a model that explores value creation from human capital. The model, based primarily on the theory of strategic factor market, holds promise in furthering extant understanding of the link between human capital, competitive advantage and firm performance. The model takes a more holistic approach to the role of human capital in value creation in firms.

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PUBLIC INTEREST STATEMENT

Studies of human capital in strategic management and strategic human resource management have done well in explaining the link between human capital and superior firm performance. However, the focus has mainly been on preventing individuals with human capital from moving to other firms. This focus is understandable given that it is individuals that ultimately own their human capital and can take their human capital to other firms. This study explores how firms may create value from human capital beyond hindering the mobility of employees. We present an approach, based on the theory of strategic factor markets, which looks at human capital as a resource that firms purchase to use in creating value in product markets, after combining it with other resources. Looking at human capital through this lens promises a more holistic understanding of the role of human capital in firms and how it creates value for superior firm performance.

Subjects: Business, Management and Accounting; Small Business Management; International Business

Keywords: human capital; strategic factor market; knowledge; competitive advantage; value creation; value capture

1. Introduction

There is little doubt from extant research that human capital can be a source of competitive advantage and superior firm performance (Crook, Todd, Combs, Woehr, & Ketchen, 2011). The hitherto focus on firm-specific human capital, in much of strategic management, was due to its perceived ability to isolate human capital from employee mobility and the potential consequences of transferring valuable human capital to other firms. More recent research has gone beyond the focus on firm-specific human (e.g. Campbell, Coff, & Kryscynski, 2012; Chadwick, 2017; Crocker & Eckardt, 2014; Mackey, Molloy, & Morris, 2014; Ployhart, Nyberg, Reilly, & Maltarich, 2014). These recent research suggest that supply-side constraints, labour market frictions, and the complementarities created by combining various forms of human capital at different levels are better able to constrain the mobility of employees.

However, a continual and single focus on inhibiting the mobility of human capital assumes that human capital already creates value for superior firm performance. Mobility constraints have value to the extent that they protect an already created value, and competitive advantage. Human capital resides in individuals and unarguably the freewill nature of individuals presents the threat of employee mobility (Coff, 1997; Wright, Dunford, & Snell, 2001). Nevertheless, a focus on mobility hindrances may be ignoring some basic cruxes of the link between human capital and superior firm performance. One of these basics is that of ensuring that the costs of acquiring and deploying human capital as resources in the firm do not exceed the value they help to create (Peteraf, 1993; Peteraf & Barney, 2003). Moreover, the effect of employee mobility on firm performance may even be positive if the movement is to cooperators (Somaya, Williamson, & Lorinkova, 2008). Relatedly, research in Strategic Human Resource Management (SHRM) implicitly assumes that the superior performance of workers with human capital automatically translates into competitive advantage and superior firm performance.

This article presents a conceptual model that explains how human capital creates value for competitive advantage and superior firm performance. The model draws primarily from extant theory of strategic factor markets (Adegbesan, 2009; Barney, 1986; Makadok, 2001; Makadok & Barney, 2001; Schmidt & Keil, 2013) and is complemented by the knowledge-based view of the firm (Grant, 1996a, 1996b; Nonaka, 1994). A succinct summary of extant strategic factor market (SFM) theory is that firms will be able to profit from resources either when they have superior expectations about the future value of such resources (Barney, 1986) or when they possess superior complementarity with the resources (Adegbesan, 2009). The knowledge-based view (KBV) considers knowledge as the most strategic resource of the firm (Grant, 1996a, 1996b; Nonaka, 1994; Simon, 1991). The knowledge resident in an individual worker forms a foundational component of human capital and forms a major part of the knowledge base of the firm (Grant, 1996a; Nyberg, Moliterno, Hale, & Lepak, 2014; Simon, 1991). The SFM model presents a holistic exploration of value creation from human capital that is useful to both strategy and SHRM scholarship of human capital. The model elucidates the link between human capital and superior firm performance beyond the established necessity to constrain the mobility of employees with human capital. Consequently, the model is an attempt to respond to the recent call for further exploration of how human capital contributes to higher level outcomes (Nyberg, Reilly, Essman, & Rodrigues, 2018). This article contributes by answering the research question: holistically, how does human capital create value for competitive advantage and superior firm performance?

The rest of the article is organized into three main sections. The first section is a brief overview of extant research on human capital in strategy and SHRM, and begins with a description of the

Table 1. Summary of key theoretical gaps in human capital-competitive advantage studies in SHRM & strategic management

Academic discipline	Key focus	Key implicit assumptions	Implications of key implicit assumptions
SHRM	HR practices, work policies and systems; Mediating mechanisms; AMO Model	Superior performance of individuals automatically translates to competitive advantage & superior firm performance	Mechanisms linking human capital and competitive advantage not acknowledged; Costs of attaining superior firm performance are ignored
Strategic Management	Firm-Specific human capital; Employees Mobility constraints	Employees' options are limited to mobility and more value capture	Firms and individuals with human capital have limited options

methodology used for the review. This is followed by the section outlining the conceptual model. Before delving into the model in the section, a synopsis of SFM theory, the primary theoretical basis of the conceptual model is first presented. The article concludes with a discussion and conclusion section, which begins with the merits and implications of the conceptual model for future research and management practice. The section and the article conclude with recommendations for research and practice.

2. Literature review

2.1. Review methodology

To begin the review, EBSCO database was used to select articles using the keywords “strategic human capital”, “human capital”, and “human resources”. This process yielded thousands of articles as human capital is a concept studied across many academic disciplines. However, to be included in the review, first, articles had to be in English and focused on firm performance. Human capital studies in strategic management and SHRM are principally focused on performance. Reading through the abstracts of articles helped in this first streamlining process. Second, articles had to have been published in Scopus indexed journals, as indexes and rankings for academic journals still provide a signal of quality despite some debates (Ott & Michailova, 2018). These two processes yielded a total of 414 journal articles. However, since the focus of this paper is to present a model, only a succinct overview of the literature review is presented (Table 1).

2.2. Overview of extant strategic human capital research

Scholarship in SHRM and strategic management’s study of human capital are particularly interested in the links human capital has with competitive advantage and firm performance. A firm has a competitive advantage when it is able to create more value in the product market than other competing firms (Peteraf & Barney, 2003). However, in the presence of powerful stakeholders with high bargaining powers, the value created may not always translate into firm performance because the value created may have been captured by powerful stakeholders (Coff, 1999). This is especially true when firm resources such as human capital directly enable value creation. Human capital of managers and executives, for example, can enable rent¹ generation for the firm (Castanias & Helfat, 1991, 2001). However, some of this value may be captured by managers in the form of higher compensation and rewards (Combs & Skill, 2003; Harris & Helfat, 1997; Sturman, Walsh, & Cheramie, 2008).

Due to the challenges posed by the unique nature of human capital (Coff, 1997), a lot of emphasis in strategy had hitherto been on firm-specific human capital (e.g. Hatch & Dyer, 2004; Kor & Leblebici, 2005; Ployhart, Van Iddekinge, & MacKenzie, 2011; Wang, He, & Mahoney, 2009). A foremost credence to this emphasis on firm-specific human capital has its roots in Becker’s human capital theory (Becker, 1962, 1964) which distinguished between general human capital

and firm-specific human capital. General human capital is human capital that is useful across firms, and firm-specific human capital is human capital that is most useful to a focal firm, usually in the firm in which it was developed. Further credence lies in the possible functions of firm-specific human capital as a form of “isolating mechanism” capable of protecting human capital from mobility threats (Amit & Schoemaker, 1993; Peteraf, 1993; Rumelt, 1984). Thus, linking firm-specific human capital to competitive advantage, and superior firm performance, came natural to strategy scholars.

However, more recent research has revealed that firm-specific human capital serves as a demand-side mobility constraint incapable of inhibiting supply-side mobility. Recent focus has shifted to supply-side constraints and labour market frictions (Campbell et al., 2012; Chadwick, 2017), and complementarities that can be created either between different forms of human capital or between human capital and the firm (Campbell, Saxton, & Banerjee, 2014; Chadwick, 2017; Crocker & Eckardt, 2014; Mackey et al., 2014; Ployhart et al., 2014). Nevertheless, focus is still on either constraining the mobility of employees or reducing the effects of employee mobility on the firm. Strategy scholars of human capital have implicitly assumed that the only option available to employees with human capital is to leave if they have limited individual bargaining power to capture more value. Hence, the focus on mobility hindrances. However, employees with human capital have the option of withholding optimum effort and their value creating ability if the option to leave is inhibited by factor market conditions and other conditions. This can potentially hinder value creation for competitive advantage and superior firm performance.

SHRM literature, on the other hand, was at first focused on the effects of Human Resource (HR) practices, policies and systems (HPPS) (Boselie, Dietz, & Boon, 2005; Guest, 2011; Wright & McMahan, 2011). In the words of Wright and McMahan (2011, p. 93), “ironically, while the HR literature focused on HR practices to the detriment of human capital, the strategy literature seemingly discovered human capital”. SHRM studies moved from a focus on HPPS to the search for the mediating mechanisms between HPPS and performance at individual and collective levels. More recently, SHRM has been focused on the ability-motivation-opportunity (AMO) model (Boon, Eckardt, Lepak, & Boselie, 2018). In the AMO model, individual and firm performance results from employees’ abilities, motivation, and the opportunity given to contribute (Boon et al., 2018; Jiang, Lepak, Hu, & Baer, 2012). However, the costs associated with acquiring, motivating, and creating opportunities for individuals with human capital to create value are invariably ignored. It is also possible for a firm to be creating value with its human capital but be unable to translate this into a competitive advantage and superior firm performance.

3. The strategic factor markets (SFM) model

3.1. A synopsis of SFM theory

SFM theory has its roots in the concept of strategic factor markets in the work of Barney (1986). A strategic factor market is “a market where the resources necessary to implement a strategy are acquired” (Barney, 1986, p. 1231). SFM theory has evolved over time and as such it is necessary to distinguish between SFM theory as a “theory” and SFM as a “market”. SFM theory attempts to explain and predict when and how firms can profit from resource acquisition (Adegbesan, 2009; Chatain, 2014; Schmidt & Keil, 2013). SFM, on the other hand, is a market where firms can make resource acquisitions for strategic implementation (Barney, 1986). This distinction is important in order to overcome two possible conceptual barriers to the application of the main tenets of SFM theory to human capital. These barriers are unavoidable consequences resulting from the nature of human capital and the purpose of SFM theory which is to profit from resource acquisition.

The first possible conceptual barrier is that individuals with human capital can neither be bought nor sold in factor markets. Human capital consists of the knowledge, skills, abilities and other characteristics of individuals (KSAOs) that can be applied to productive work for the benefits of individuals and firms (Coff & Kryscynski, 2011; Ployhart et al., 2014; Wright, Coff, & Moliterno, 2014). Human capital is embodied in individuals and it is individuals that make their KSAOs

available for use in firms. Thus, individuals and their human capital cannot be traded in factor markets in the strict sense of the word, trade.

However, individuals acquire KSAOs that make up human capital through formal and informal education (Hitt, Bierman, Shimizu, & Kochhar, 2001), off- and on-the-job training (Becker, 1962; Hatch & Dyer, 2004) and experience (Ployhart et al., 2011). Firms acquire human capital through labour markets such as when they employ managers from managerial labour markets (Mackey & Barney, 2005). The continuous exchange that takes place between firms and individual owners of human capital in different forms of employment relationships in which individuals make their human capital available for use in firms represents a form of factor market. Consequently, each firm is a factor market for human capital. The concept of internal labour markets (Althauser, 1989; Bidwell, 2011; Doeringer & Piore, 1970) and the observed practice of poaching by firms are reflections of a factor market for human capital. Thus, firms form a substantial part of factor markets for human capital and can be potential SFMs. However, as we shall soon see, firms are not the sole components of the factor market for human capital.

The second possible conceptual barrier stems from recent research. Ployhart et al. (2014) have suggested the possibility of the non-existence of strategic factor markets for human capital. Their argument rests partly on the complexity and the different complementarities that may result from different combinations of human capital within the firm. They argued that human capital even at the individual level is complex and KSAOs at intra-individual levels can be combined in various ways and at different levels for economic benefits of the firm and the individual. They concluded, albeit with caution, that there may be no SFM for resources such as human capital. However, we agree with their arguments but not with their conclusion. It seems easier to conclude that all factor markets for human capital are potential SFMs than to conclude that there may be no SFM for human capital. The potentials for the existence and non-existence of an SFM for human capital may lie at two different ends but the logical arguments that each individual presents a unique complex form of human capital may lead to the conclusion that indeed there may be more SFMs for human capital than has been recognized by extant human capital studies. Moreover, even unit levels and bundles of human capital can be acquired through firm mergers and acquisition in the market for corporate control, a form of SFM (Capron & Pistre, 2002).

While conditions in an SFM may enable firms to acquire resources profitably, SFM theory goes beyond an SFM market as there are other conditions that act as determinants of profitable resource acquisitions other than conditions in an SFM. Unless firms exist to buy and sell resources in the exact form and state in which resources are acquired from SFMs, profiting from resource acquisition will almost always entail an internal process that takes place within the boundaries of the firm. There is a transformation process that takes place within firms such that resources acquired by firms are combined with resources from other sources in order to create some sort of value in product markets. Firms utilize different resources through resource management and orchestration to attain competitive advantage and superior performance (Sirmon, Hitt, & Ireland, 2007; Sirmon, Hitt, Ireland, & Gilbert, 2011). Even when resources are bought and sold in the same form and shape such as those that take place in trading firms, there is still an element of a management process. In addition, although some resources required for competitive advantage, including human capital, can be built up over time SFM theory can still be applied to understanding the link between such resources and competitive advantage (Barney, 1989; Dierickx & Cool, 1989).

SFM theory is primarily concerned with understanding how resources required for implementing strategies can be acquired profitably. Current primary tenets of SFM theory rest on two main conditions, superior expectations (Barney, 1986) and superior resource complementarity (Adegbesan, 2009).

3.1.1. *Superior expectations*

Firms will only be able to profitably acquire resources from SFMs when they have superior expectations about the potential earning value of the target resource (Barney, 1986). When firms make acquisitions in SFMs, each firm has a different expectation about the earning potential of the target resource. These differences in expectations result from information asymmetries about the resource. The focus of much research in SFM theory has centered on the role and importance of having accurate superior information about resource targets (e.g. Denrell, Fang, & Winter, 2003; Makadok, 2001; Makadok & Barney, 2001; Maritan & Florence, 2008; Schmidt & Keil, 2013). Information asymmetries help create imperfect SFMs that enable firms with superior expectations to earn abnormal returns on resource acquisitions as market prices fail to reflect the true price of the resource (Barney, 1986).

3.1.2. *Superior resource complementarity*

However, due to heterogeneity in resource complementarity between firms and target resources, firms will differ in their level of value creating abilities with target resources acquired in SFMs. Thus, firms with superior resource complementarity to target resources may be able to attain competitive advantage even without prior superior expectations (Adegbesan, 2009; Adegbesan & Higgins, 2010²). Thus, profitable acquisitions from SFMs may still be possible even in the absence of superior expectations due to superior complementarity to a target resource in SFMs.

This overview of SFM theory has been rather brief. More research have provided fine-grained insights into SFM theory (e.g. Chatain, 2014; Makadok & Barney, 2001; Maritan & Florence, 2008; Ross, 2012). This synopsis serves only to give a foundational understanding of the main tenets of SFM theory.

3.2. *The SFM model of human capital*

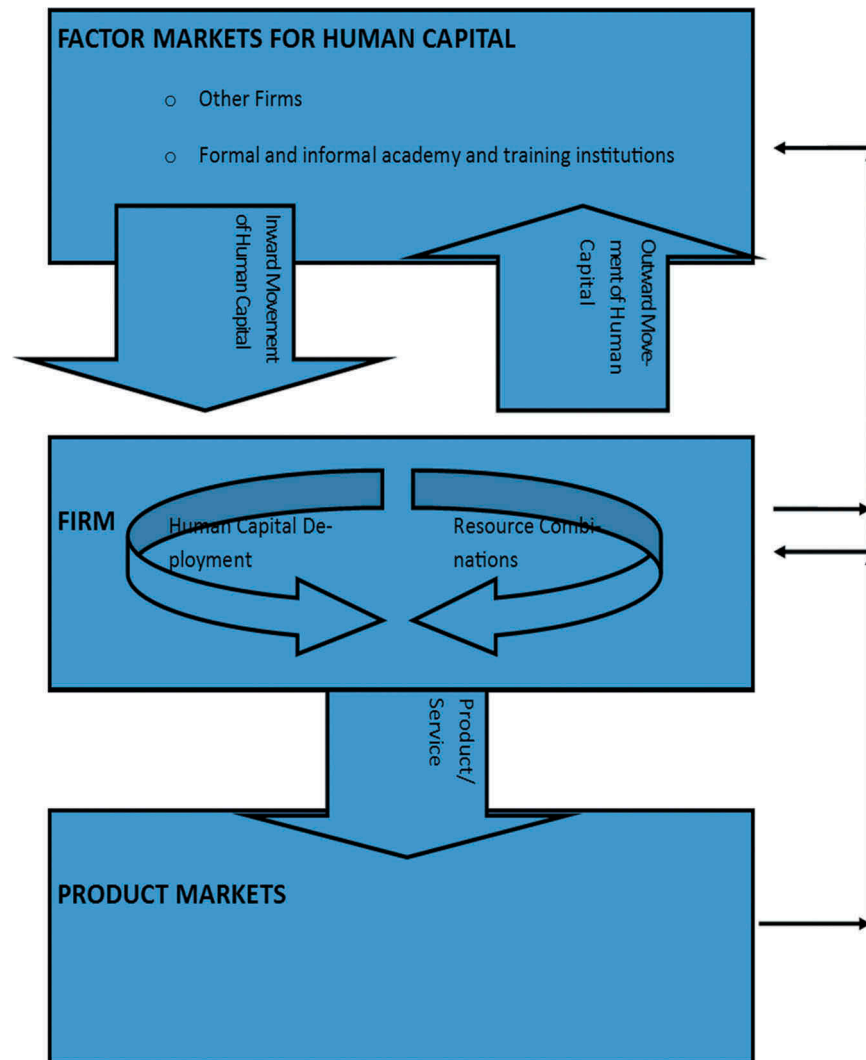
The SFM model presented here represents a simple but holistic approach to looking at human capital for value creation (see Figure 1). There are four basic assumptions underlying this approach.

3.2.1. *Basic assumptions of the model*

One, human capital exists primarily at the intra-individual level (Nyberg et al., 2014; Ployhart & Moliterno, 2011; Wright et al., 2014). Human capital is at different levels (Nyberg et al., 2014; Ployhart et al., 2014). However, the basic level of human capital is at the intra-individual level. Two, knowledge is the foundational attribute of human capital because it is “the foundation on which skills and abilities are developed” (Nyberg et al., 2014, p. 321). Knowledge is also the most strategic resource of the firm and can reside in individuals as part of their human capital (Grant, 1996a, 1996b; Nonaka, 1994; Simon, 1991). As a result of these first two assumptions, human capital is reflected in either the knowledge or skills or the abilities or other characteristics of individuals that can be used for the productive benefit of the firm. Each KSAO can be regarded as human capital but skills, abilities and other characteristics depend on the knowledge of the individual possessing the KSAOs attributes. However, each KSAO is a firm resource as human capital only to the extent to which it is accessible for use in the firm. Human capital is not a resource unless it is available for use for the firm’s purpose (Nyberg et al., 2014). Human capital at the individual level is already a complex combination of KSAOs. In this sense, no two individuals can have the same level or form of human capital. Human capital at the individual level, and each individual, is therefore a complex resource rather than a commodity (Denrell et al., 2003). The second assumption also aligns with the spirit of laying micro-foundations into organization phenomena as aid to unfolding underlying mechanisms of competitive advantage from resources such as human capital (Coff & Kruscynski, 2011; Foss, 2011).

Three, human capital does not create value independently of the firm. This third assumption is a basic and implicit assumption of human capital research in management and organization studies. Although there are situations and contexts in which human capital can be used to create value independently by individuals embodied with it, these situations and contexts do not constitute human capital in the context to which the concept is studied within strategy and SHRM. Value creation with

Figure 1. An SFM model of competitive advantage from human capital.



firm resources, whether in the form of traditional Ricardian rents or quasi-rents, is a co-creation process between resource owners and the firm (Peteraf, 1993). Like all firm resources, value creation with human capital is always between the firm and the individual owners of human capital. However, unlike other resources, the property rights of firms to human capital are tenuous and incomplete (Barzel, 1997). “Human capital resides in human resources and cannot be alienated from them” (Kim & Mahoney, 2007, p. 19).

Four, human capital is not owned by the firm. This results from the tenuous property rights firms have to human capital. Firms may acquire human capital through internal development, acquisition, contracting, and alliance (Lepak & Snell, 1999). Individuals lend their human capital to the firm through these different forms of employment relationships. Individuals are the true owners of their human capital. Consequently, though human capital is unlike other resources, firms’ relationships with their human capital can be likened to SFM transactions.

In the SFM model, firms access human capital from various factor markets for human capital and deploy it in different ways with other resources in various combinations in order to create value in product markets (see Figure 1). However, access to human capital and its deployment with other resources, and resource combination may not be enough for competitive advantage. A consequence

of the process of human capital deployment and combination with other resources of the firm is the change that takes place in the nature of human capital. These processes within the firm increase the complexity, firm-specificity, and social complexity of human capital (Ployhart et al., 2014). They are however not enough for competitive advantage. These features are capable of protecting a firm's competitive advantage by making it inimitable and sustainable (Lippman & Rumelt, 1982; Reed & DeFillippi, 1990). However, they do not create any competitive advantage for a firm. The possession and deployment of resources with these features cannot create competitive advantage if they do not create enough value in product markets. Moreover, the value they help to create may be offset by the costs of their acquisition and development (Barney, 1989; Coff, 1999; Peteraf, 1993). Consequently, creating value from human capital for competitive advantage results from accessing and deploying human capital for value creation, more than other firms, in product markets.³

3.2.2. Accessing human capital

It is quite impossible to clarify the link between human capital and competitive advantage without accounting for how human capital may be accessed and sourced by individuals and firms. The main source of a firm's human capital is the factor market for human capital which is defined here as a market for the acquisition and development of the KSAOs of individuals. This differs from the conventional concept of labour market. Though partly akin to the concept of internal labour markets (Doeringer & Piore, 1970), it is distinct from it. The external labour market is seen as a market from which firms acquire workers through employment and other forms of contractual agreements while the internal labour market refers to the processes, such as the administrative procedures that govern internal mobility through lateral transfers, promotions, and on-the-job training (Althauser, 1989; Bidwell, 2011; Doeringer & Piore, 1970). However, the factor market for human capital is not necessarily concerned with individuals. Rather, it goes beyond the individual to the intra-individual level of human capital and is concerned with the content, processes and institutions that govern the acquisition and development of KSAOs that qualify as human capital. Acquisition from factor markets for human capital refers to acquisition of specific KSAOs that reside only in individuals as human capital.

The factor market for human capital includes individuals with KSAOs who lend the service of their human capital to firms in return for certain financial and non-financial returns. It also includes firms that employ the services of individuals with these certain KSAOs because experience in firms is a major source of human capital (Hitt et al., 2001). The experience gained working in firms provides opportunities for individuals to increase human capital through the acquisition of explicit and tacit knowledge which comes from training and experience derived from deploying human capital in firms. The factor market for human capital also includes formal and informal academy and training institutions (see Figure 1). From the origins of human capital, scholars had identified various sources of human capital such as education (Becker, 1962; Schultz, 1961) and on-the-job training (Becker, 1962, 1964). Individuals acquire various forms of KSAOs from formal education and trainings acquired on and off the job.

Since human capital resides in individuals, the inward and outward movement of individuals from the firm represents the movement of human capital in and out of the firm. Inward movements of human capital represent access to human capital by firms. Firms can, therefore, access human capital through access to individuals. However, firms also access their required human capital either through the hiring of individuals with human capital or through training and development of existing workers. Hiring of individuals with required human capital may be through direct hires from formal educational institutions or through lateral hires from other firms within and across industry boundaries (Hatch & Dyer, 2004; Kor & Leblebici, 2005). Thus, firms usually acquire human capital either through the hiring of individuals or through increasing the knowledge base of individuals already with some form of employment relationship with the firm. Another rather uncommon way through which firms may access human capital is through mergers, acquisitions, and strategic partnerships (Ferrary, 2015; Ranft & Lord, 2000).

Outward movements of human capital occur when firms lose individuals such as when individuals leave employment relationships or when firms lose access to individuals in any of the processes described above. However, the human capital that is lost in outward movements is not lost in the same form in which it came in. This is because human capital increases when it is used in performing tasks in firms (Becker, 1962; Hitt et al., 2001). The costs of accessing human capital which includes costs of recruiting individuals with human capital (Bartlett & Ghoshal, 2002) and costs of training (Bapna, Langer, Mehra, Gopal, & Gupta, 2013) may also be lost because of the curvilinear relationship between human capital and firm performance (Hitt et al., 2001). Consequently, it takes time for the productive value of human capital to exceed its costs. Thus, the extant emphasis on mobility constraints and firm-specific human capital in strategy is understandable as outward movement of human capital may indeed lead to loss of existing competitive advantage and superior firm performance, especially if the human capital movement is to competitors (Aime, Johnson, Ridge, & Hill, 2010; Somaya et al., 2008). The SFM model being outlined here is therefore compatible with extant studies. However, mobility constraints have value to the extent that they protect an already created value and advantage. Value and competitive advantages are created in product markets, not in labour markets or SFMs. To attain competitive advantage, a firm must be doing at least one of three things. Either it is creating more value in the product market in the form of higher perceived customer value than its competitors, or it is creating the same value at lower economic costs, or it is doing both at the same time (Peteraf & Barney, 2003). Consequently,

Proposition 1a: Firms *may* be able to gain competitive advantage with human capital when they have superior expectations on *accessing* human capital for value creation in product markets

Attaining competitive advantage will also be possible for firms that have resource complementarity to human capital. “The concept of complementarity denotes the beneficial interplay of the elements of a system where the presence of one element increases the values of others” (Ennen & Richter, 2010, p. 207). Resource complementarity exists when the value created by resource combinations is more than the sum of the value created by its constituent parts (Adegbesan, 2009). In the case of human capital, resource complementarity may exist between human capital and the firm, represented by the tangible and intangible resources of the firm. Therefore,

Proposition 2a: Firms *may* be able to gain competitive advantage with human capital when they have superior resource complementarity with the human capital they *access* for value creation in product markets

3.2.3. Deploying human capital

Like other resources, human capital has to be deployed for actual value creation. However, unlike human capital, information asymmetries in SFM for human capital increase the chances of accessing low-quality human capital or “lemons” (Akerlof, 1970; Schmidt & Hunter, 1998). Also unlike other resources, individuals, the true owners of human capital, can withhold effort. The role of human capital in the firm is in their use in performing various tasks by individuals who possess them. Firms employ the services of individuals with human capital to carry out various tasks geared towards providing some sort of value in product markets. Although individuals continue to be part of SFMs for human capital, they contract with firms in different ways to provide human capital. Since the value of a resource depends on the service the resource provides to the firm (Penrose, 1959), the value of human capital will vary between firms and will depend on the tasks to which human capital is deployed to in firms.

The tasks performed by individuals with their human capital serve as the building blocks of organizational capabilities, “the socially complex routines that determine the efficiency with which

firms physically transform inputs into outputs” (Collis, 1994, p. 145; Grant, 1996b). Organizational capabilities are made possible by knowledge resources such as human capital through the tasks performed by individuals embodied with different types of knowledge (Grant, 1996a, 1996b; Wei, Wu, Cheung, & Chiu, 2011). The tacit knowledge of firms, for example, originates in the tacit knowledge of individuals, and mechanisms such as directions and routines serve to integrate the tacit knowledge of individuals into organizational capabilities (Grant, 1996a, 1996b). The process of deploying human capital for task performance in order to create organizational capabilities also involves combining human capital with other resources and various resource combinations in resource management and orchestration (Sirmon et al., 2007, 2011).

In human capital deployment, human capital is either deployed directly or indirectly to value creating activities. KSAOs that can be regarded as human capital is partially determined by the KSAOs that are directly or indirectly required to create value in product markets. Thus, product markets have some sort of feedback mechanism to the firm and SFM for human capital. It is only attributes relating to the production requirements of products and services by firms that are valuable in SFMs for human capital. Human capital required for the production of obsolete goods and services may become obsolete as they may no longer be required by firms. Unexpected technological changes have been shown to make human capital obsolete by causing organizational changes (Autor, Katz, & Krueger, 1998; Bartel & Sicherman, 1993; Borghans, Marey, & Ter Weel, 2003; Green, Ashton, Burchell, Davies, & Felstead, 2000). These organizational changes ultimately impact the market for human capital. Thus, human capital required for production may become unavailable in factor markets for human capital. In the same vein, changes in product markets also affect SFM for human capital. Summarily, changes in product markets affect firms and SFMs for human capital (Figure 1). In professional fields like engineering, for instance, there is a direct feedback mechanism between the industry and the training received by engineers (Simon, 1991). Such feedback mechanisms between industries and the factor markets for human capital have a significant influence on KSAOs that can be regarded as human capital.

Any individual attribute can be regarded as human capital as long as it can be deployed in the firm directly or indirectly for value creation in product markets. However, what makes human capital strategic does not depend on how directly or indirectly related to value creating activities the human capital is. Rather, the strategic nature of human capital depends on whether or not it aids in developing a strategy for the firm to be able to position itself in the product market (Barney, 1986; Hoopes, Madsen, & Walker, 2003). The human capital of management executives and Top Management Teams (TMTs), for example, are not strategic human capital merely because of their position in firms but because they are involved in formulating and implementing strategy.

Superior expectations may enable firms to access human capital at costs below their worth. However, this is no guarantee of effective deployment (Groysberg & Lee, 2009; Groysberg, Lee, & Nanda, 2008). Human capital deployment is also not enough for value creation in product markets. Even in human capital intensive firms such as professional service firms, where the input of human capital forms the core of the service provided to product markets, the use of other firm resources is indispensable. Resource complementarity is required for effective deployment. Resource complementarity can also be created from other resources of the firm either in combination with human capital or in isolation between other resources. However, firms’ resource complementarity with human capital deployment is only part of the story. The complementarity created from human capital deployment maybe enhanced when it is combined with other firm resources (Sirmon et al., 2007, 2011). Thus, part of the resource complementarity created from human capital deployment is derived from its combination with the complementary resources in the firm.

Furthermore, individuals with human capital are more likely to be attracted to firms with the most ability to make positive changes to their human capital during deployment. Firms that carry out extensive on- and off-the-job training, for example, are usually more attractive to individuals with human capital than firms that do not. Firms that possess prestigious tangible and intangible

assets such as brand, goodwill, and status, are generally able to attract individuals with quality human capital at relatively lower costs than their competitors (Bidwell, Won, Barbulescu, & Mollick, 2015). Thus, different firms have different resource complementarity to access and to deploy human capital. Even when the value created in product markets is the same for all firms, competitive advantage may be attained by firms with superior resource complementarity both to access and deploy human capital. Summarily,

Proposition 1b: Firms with superior expectations on *accessing* human capital alone *may not* be able to gain competitive advantage with human capital when they *deploy* human capital for value creation in product markets

Proposition 2b: Firms *may* be able to gain competitive advantage with human capital when they have superior resource complementarity with the human capital they *deploy* for value creation in product markets

3.3. Creating superior firm performance with human capital

However, competitive advantage will not always lead to superior performance (Coff, 1999). A firm may be creating all the value in the product market and still not have superior firm performance. Individuals with human capital may be able to capture more of the value created than the firm. However, all things being equal, trade in SFMs is driven by scarcity, bargaining ability, and superior resource complementarity (Adegbesan, 2009). In the case of human capital, labour markets are only a part of the SFM for human capital. This raises the complexity in value creation and value capture from human capital, but confers a great benefit on firms rather than on individuals. The processes of task bundling, the use of teams for task performance, and most importantly, the complementary resources available to firms reduce the bargaining power of individuals with human capital and create heterogeneous resource complementarity (Adegbesan, 2009). Consequently,

Proposition 3: Firms with superior resource complementarity both in *accessing* and in *deploying* human capital for value creation in product markets may be able to have superior firm performance

A firm's position in product markets may also enable it to gain privileged access to resources such as human capital (Bidwell et al., 2015; Schmidt & Keil, 2013). However, a firm's market position results partially from human capital deployment and resource combinations carried out in the past (Schmidt & Keil, 2013). This suggests that the process of creating competitive advantage with human capital may be a reiterative and dynamic process between firms, SFMs for human capital, and product markets that reinforces itself over time (see Figure 1); lending support to Pfeffer's (1994) argument that the most sustainable competitive advantage is the advantage that is built on people and their human capital, rather than on other forms of capital.

4. Discussion and conclusion

4.1. Merits and implications for research and management practice

The model presented above draws from extant SFM theory and the KBV of the firm and holds promise in aiding strategic management and SHRM to better link human capital with competitive advantage and superior performance. SFM theory and KBV theoretical perspectives have been explored as part of the broader Resource-Based Theory (RBT) to show how firms may create value from human capital. Although based broadly on RBT, it is able to account for how different types of rents may be created by human capital for the firm beyond the traditional Ricardian rents to both non-traditional Ricardian and entrepreneurial rents; a criticism that has been leveled against human capital studies that have adopted RBT especially in SHRM (Chadwick & Dabu, 2009).

The model is proposed as a holistic approach to a general understanding of the role of human capital in firms and in so doing is able to reveal the link between human capital and competitive advantage. The model as developed reveals why human capital that is specific to a firm may indeed create competitive advantage when the complementarities it helps to create from its deployment and combination with other resources enables the firm to attract human capital at lower costs. The model also helps to bridge the gap between resource acquisition and resource development that still persists in studies based on RBT (Maritan & Peteraf, 2011). Conceptualizing human capital at the intra-individual level and the movements in and out of the firm enables human capital to be studied as one resource where the mechanisms for its access (acquisition) and deployment (development) can be studied. Furthermore, the model reveals how resource building may enable resource buying and vice versa (Adegbesan, 2009).

Linking human capital to its role in task performance during deployment for value creation in product markets may appear simple and straightforward. However, this has implications for the individual characteristics that can qualify as human capital. There still appears to be some confusion on the exact nature of individual characteristics that can be regarded as human capital (Wright et al., 2014). The fuss over the individual characteristics that constitute human capital may seem elementary and unnecessary given the history of human capital and the sheer number of studies that has been conducted. However, given the huge variation in the individual characteristics that can be regarded as human capital (Crook et al., 2011), its exact meaning still appears a little fuzzy. A deeper reflection on some possible interrelated follow-on questions reveals the cause for concern. What qualifies different individual human attributes as human capital? Is it all positive attributes of individuals that qualify as human capital? Do physical and other natural individual human characteristics qualify to be called human capital? Are the characteristics of individuals that qualify as human capital dependent on context, time and space?

Stable characteristics such as knowledge, cognition, experience, education and unstable characteristics such as affect and behavior have all been classified as human capital (Wright et al., 2014). The model presented here makes it clear that the qualities that qualify as human capital are ultimately dependent on the product market. In the current knowledge economy where firms rely more on knowledge for productive activities, the knowledge embodied in individuals may be more important than other individual characteristics. Conversely, when other individual characteristics become the basis for core productive activities, they may become more important to the firm and be regarded as human capital. What may be regarded as human capital is therefore dependent on context, time and space but is largely influenced by what is required to produce value in product markets.

4.2. Implications for future research

There is precious little space to enumerate the several implications of the model for future research and practice. However, one important area for future research is finding out how the specific dynamics within SFMs for human capital may affect the ability of firms to access and deploy human capital. Undoubtedly, there has been some research in this area. However, one topic within this area that has hitherto been largely ignored is the role and influence of other parts of the SFM for human capital apart from the external labour market. Specifically, sourcing for human capital in formal and informal academy and training institutions for the required human capital to meet customer needs in product markets. In an increasingly knowledge based economy (Nonaka, 1994), formal and informal educational institutions, constitute a major part of the factor market for human capital. Recent work by Brymer, Chadwick, Hill, and Molloy (2019) and Brymer, Molloy, and Gilbert (2014) on repeated inter-organizational hiring, generally termed “pipelines” is a step in this direction. It would be interesting, for example, to study the many specific interactions between the different elements in SFMs for human capital such as individuals, firms, and training institutions and how they interact with each other and with product markets. The effect of scarcity (in all the different constituents of the market for human capital) and other dynamics on the ability of firms to access and deploy human capital, and any resultant effects on bargaining power would also yield useful insights.

An additional consequence of the changes in the nature of human capital that takes place during deployment that has not been explored here in detail is its effects on value capture. Empirically, are firms that provide positive changes to human capital able to appropriate more value than firms that do not? Are there negative changes to human capital during deployment? If so, how would such negative changes affect value creation and value capture? Issues of motivation are clearly important factors that can influence resource complementarity from human capital deployment and resource combinations. Does motivation help create complementarity between individuals and firms? How exactly can motivational issues create complementarities for the firm?

Given the different types of knowledge and its multi-dimensional nature, the resultant human capital at individual levels will be different across the different dimensions. However, little is known about the effects of the resultant types of individual human capital and how the resultant human capital at the individual level will emerge into a unit level human capital resource through the “emergent enabling process” described in Ployhart and Moliterno (2011). In addition, the resultant human capital may be aligned to particular professions and occupations to various degrees, and product markets do not always align completely with one occupation or profession. For example, the product markets and factor markets for human capital in knowledge-intensive-firms such as law and management consulting firms align with each other to a larger extent than what exists in other industry contexts. The effect of human capital on value creation and competitive advantage through its access and deployment may differ between contexts where such alignments exist and contexts without such alignments. Related to this, there is need to also empirically study resource complementarity of human capital in contexts other than sports contexts in order to reveal more nuances (Campbell et al., 2014; Crocker & Eckardt, 2014; Ethiraj & Garg, 2012 have all used sports contexts). The relationships between SFMs for human capital, the firm and product market in sports contexts are quite distinct from those same relationships in the contexts of more regular firms. Accessing and deploying human capital in sports contexts is not the same as accessing and deploying human capital in regular firm contexts.

The nature of complementary assets needed to combine with human capital during its deployment and combinations with other resources will depend on how human capital intensive the firm is. For firms that are less human capital intensive, human capital deployment may be less consequential and thus its deployment may not be seen as important as other resource combinations. This has implications for mobility of human capital and has already been shown to have effects on competitive advantage and performance (e.g. Aime et al., 2010; Groysberg & Lee, 2009; Groysberg et al., 2008; Somaya et al., 2008). However, there is a need to study the changes in human capital at different levels that result from human capital deployment (in combination with complementary firm resources), and employee mobility (in and out of the firm). Studying the effects of these changes on competitive advantage and firm performance will also be worthwhile.

Given that individuals with human capital lend their service to the firm, employees do not constitute part of the firm, in a strict sense. Employees and other individuals with different employment relationships with the firm are suppliers whose receipts make up the costs of the firm. The cost of trainings, wages and salaries, and other benefits represent the price at which human capital is accessed. This implies a complex application of the market and price mechanism to human capital. A study of the complexity of this mechanism deserves further attention.

Seeing employees as suppliers of human capital to the firm may appear as being in contrast to the literature on human capital valuation which advocate for the inclusion of human capital as assets in financial statements rather than as cost (e.g. Ballester, Livnat, & Sinha, 2002; Flamholtz, 1971; Likert & Pyle, 1971). Even though human capital forms part of the resources of a firm, it is not a resource under the absolute control of the firm and as such does not belong to the firm. Perhaps the emergent unit-level human capital resource belongs to the firm (Ployhart & Moliterno, 2011) but since the origins of unit-level human capital lie at the intra-individual level, the proposition that human capital should be valued and included in financial statements requires further exploration. Despite the difficulties and complexities in human capital valuation, it may be possible

to view human capital as a form of “contingent liability”. The modalities for this possibility are without doubt viable topics for future research.

4.3. Conclusion

What makes human capital strategic, or non-strategic, is neither the form nor the type of human capital but the manner in which firms use it to create value in product markets. Consequently, innovative and creative use of human capital is more important than the absolute type of human capital. In conclusion, mobility hindrance of individuals with human capital may sustain a competitive advantage that has already been created with human capital. However, mobility hindrances are incapable of creating competitive advantage, or superior performance. The onus is therefore on firms to create superior resource complementarity with human capital that ensures value creation, and value capture, rather than focusing on hindering employee mobility.

Funding

The authors received no direct funding for this research.

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Citation information

Cite this article as: A holistic model of human capital for value creation and superior firm performance: The Strategic factor market model, Ebes Esho & Grietjie Verhoef, *Cogent Business & Management* (2020), 7: 1728998.

Notes

1. Rent is used here in a very loose form and is synonymous with value; rent cannot be created unless some form of value has already been created. Value and rent are used interchangeably throughout the paper.
2. Indeed Adegbesan and Higgins (2010) showed that even in an SFM for strategic alliances, for example, a determinant of the profitability of an alliance to a participating firm depends partly on the complementarity between the firm and the alliance.
3. Product market here refers to the market that receives the goods and services produced by the firm. All recipients of the firms' goods and services in the downstream markets are regarded as product markets.

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