



## TALENT MANAGEMENT VULNERABILITY IN GLOBAL HEALTHCARE VALUE CHAINS: A GENERAL SYSTEMS THEORY PERSPECTIVE

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### Abstract

*The purpose of this paper is to explore the impact of talent management vulnerability, specifically, talent acquisition, retention, and replacement activities, on consumer value within global healthcare value chains. Within the context of this paper, the term “talent” can be used interchangeably with the term “employee”. The term “consumer” may refer to a patient in need of healthcare products or services or a healthy individual taking advantage of preventive healthcare practices. The collaborative network of global healthcare value chains consist of domestic and international suppliers, providers, and consumers, highly coupled in the process of pain alleviation and health preservation. This collaborative network constitutes a system that can be theoretically explored using a General Systems Theory framework. The paper uses this theoretical framework to join the scholarly literature discussion on talent management within global healthcare value chains.*

**Keywords:** *Global Healthcare; Value Chain; Talent Management; General Systems Theory, Collaborative Networks*

### Introduction

The purpose of this paper is to explore the impact of three specific talent management activities, talent acquisition, retention, and replacement, on consumer value within global healthcare value chains. The actors of global healthcare value chains, consumers, managers, care providers, and administrators, recognize that talent management is a complex and diverse issue (Rouse, 2008) that warrants research to identify and assess its vulnerability. The complexity of this issue lends itself to analysis using a General Systems Theory approach (Sturmberg, Martin, and Katerndahl, 2014, p. 66), as opposed to other reductionist theoretical approaches.

In the United States, healthcare costs have increased dramatically over the past 30 years. Domestically, healthcare spending represented 17.2 percent of the nation’s gross domestic product (GDP) in 2012 (Martin, Hartman, Whittle, and Catlin, 2014, p. 67). The problem is not

just that this spending percentage includes a complex variety of costs (e.g., labor, supplies, technology, and administrative); the real problem is that those costs are not sustainable. It is projected that at the current rate of increase (3.8 percent annually), healthcare spending will represent approximately 20 percent of the U.S. GDP by the year 2021 (Wayne, 2012). The problem of increasing costs can be explored in a variety of ways by healthcare stakeholders. Research indicates that cost reduction efforts are underway to actually lower healthcare spending (e.g. healthcare reform). Whether this is actually occurring is the subject of much speculation and debate. One way to explore theoretical cost reduction strategies is through research (Lee and Lin, 2011). Research studies can break down component costs and analyze the individual components to determine their weight of impact on total costs.

This paper explores the labor component (talent management) of a global healthcare value chain, as the problem of study; and consumer value as the unit of analysis. Global value chain research is particularly useful in understanding underlying issues of sub-value chains, such as talent management issues within a supply chain. Sub-value chains (e.g., supply chains), are divided among multiple firms and spread across wide geographic spaces; yet they form a collaborative network called a "global value chain" (Center on Globalization Governance & Competitiveness, 2006).

Key characteristics of value chains are the activities and actors involved in delivering goods or services, which provide consumer value. Global "healthcare" value chain research is a relatively new field of study with limited extant literature, which precludes an understanding of comprehensive vulnerability within global healthcare value chains. It is hoped that this review will stimulate interest for further research in the area of global healthcare value chains, especially research which relates to the objectives of the United Nations Millennium Development Goals (MDGs) for global health (Lomazzi, Borisch, and Laaser, 2014, p. 71).

"The United Nations Millennium Development Goals are eight goals that all 191 UN member states have agreed to try to achieve by the year 2015. The United Nations Millennium Declaration, signed in September 2000 commits world leaders to combat poverty, hunger, disease, illiteracy, environmental degradation, and discrimination against women. The MDGs are derived from this Declaration, and all have specific targets and indicators. The Eight Millennium Development Goals are:

- to eradicate extreme poverty and hunger;
- to achieve universal primary education;
- to promote gender equality and empower women;
- to reduce child mortality;
- to improve maternal health;
- to combat HIV/AIDS, malaria, and other diseases;
- to ensure environmental sustainability; and
- to develop a global partnership for development.

The MDGs are inter-dependent; all the MDG influence health, and health influences all the MDGs. For example, better health enables children to learn and adults to earn. Gender equality is essential to the achievement of better health. Reducing poverty, hunger and environmental degradation positively influences, but also depends on, better health" (World Health Organization, 2014).

Such research will facilitate a better understanding of the linkages between buyers and suppliers (Saliola and Zanfei, 2009, p. 369), bound in a “captive” network (Gereffi, Humphrey, and Sturgeon, 2005) to deliver quality patient care.

This review begins by introducing the concept of global healthcare value chains and issues affecting their delivery of consumer value. Next, the paper explores the review question, “What talent management vulnerability threatens the sustainability of global healthcare value chains?” The paper’s methodology is a literature review of qualitative case studies and peer-reviewed articles, which explore extant literature in the field of global healthcare value chains. The consumer value impacts and vulnerability, identified in the literature, are examined using a General Systems Theory theoretical framework. Analysis and Findings of the literature are discussed to determine whether or not key variables (talent management vulnerability-as the independent variable, and healthcare consumer value-as the dependent variable) were operationalized and generalizable. Limitations of the findings are reported. Lastly, results and conclusions of the review are provided, which also suggests implications for management practice and areas for future research study.

## **Review Question**

The paper explores the following review question; “What talent management vulnerability threatens the sustainability of global healthcare value chains?” Using General Systems Theory as a theoretical lens, this paper makes a claim that talent management complexity creates vulnerability in managing the employee activities needed to support the patient care delivery process within global healthcare value chains. Two propositions are presented in the paper. Proposition (1) Global healthcare value chains transform linear value chains into non-linear service delivery models. Proposition (2) Global healthcare value chains are governed as a network of captive sub- value chains with asymmetric power relationships. The non-linear characteristic and power asymmetry create dense, highly codified relationship transactions between network members within the chain. This, in turn, causes vulnerability which may be mitigated using talent management strategies.

## **Methodology**

The paper takes a General Systems Theory approach to explore the impact of vulnerability within the global healthcare value chain. A thematic literature review methodology is employed, which incorporates case studies and a review of primary research articles to provide an objective assessment of the global healthcare value chain’s vulnerability and sustainability (Lee and Pati 2012). General Systems Theory, which was popularized by Ludwig von Bertalanffy (1972), is a way to analyze and understand complex adaptive systems, which are collections of many different components (agents) interacting in nonlinear ways (Sturmberg et al., 2014, p. 66). This theoretical framework suits the problem of study (talent management vulnerability) because it recognizes that in the absence of specific supervisory influences (i.e. global value chain management) the complex behavior of specific agents (value chain members) cannot be explained using reductionist theoretical frameworks (Sturmberg et al., 2014, p. 66). The application of General Systems Theory enables the review to be conducted using talent management vulnerability, as an independent variable, and consumer value, as the dependent variable. This approach does not view talent management vulnerability in isolation within the

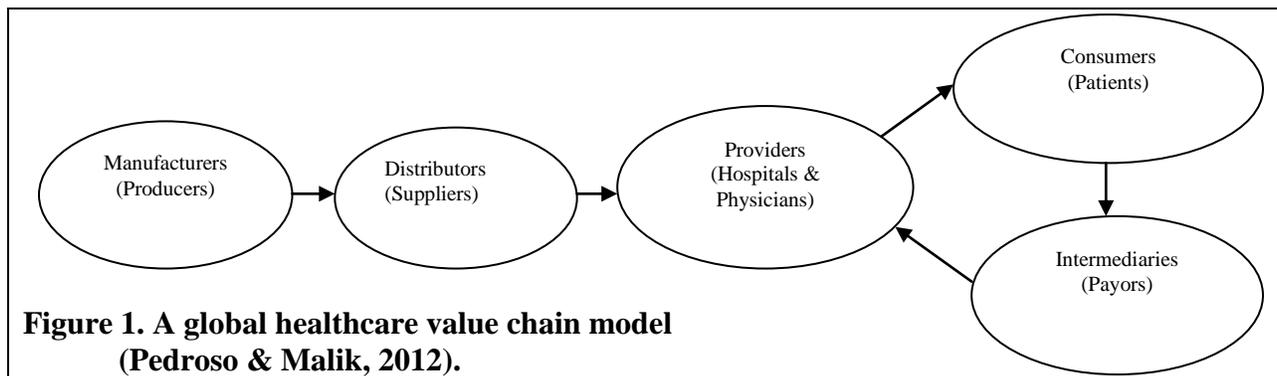
healthcare supply chain, or consumer value as an isolated outcome of that supply chain. Instead, the General Systems Theory approach recognizes that both, talent management and consumer value, must be integrated (Young and Leveson, 2014, p. 31) to produce an effective and efficient value chain.

To operationalize talent management vulnerability, researchers treat it as an independent variable. Using General Systems Theory, the influence and impact of talent management vulnerability can be explored by treating talent management (Bielecki and Stocki, 2010, p. 489) as a component of a network system. Global healthcare value chains are not merely an amalgamation of erratic supply chains. On the contrary, they are value chains that form a network of integrated healthcare delivery systems. Throughout this review, the General Systems Theory framework will be employed to maintain focus and congruency.

### Literature Review

Historically, the term value chain emerged as a way to define the collaborative relationships existing between businesses and consumers; however, the definitions lacked specificity in defining the causal linkages of value creation. The concept of global value chains was popularized by Gereffi and Korzeniewicz (1994) in their seminal book titled, *Commodity Chains and Global Capitalism*. The book explained how the production, distribution, and consumption of products are globally interconnected along commodity or value chains. Additionally, research on value chains at the international (Dolan, 2004, p. 100) and national (Bielecki and Stocki, 2010, p. 489) levels recognize the vulnerability of the chain to workforce management issues. In a separate research study by Gereffi and Lee (2012), employment practices and labor issues were identified as sources of weakness in global supply value chains due to the high level of inter-dependability and collaboration among value chain participants.

Healthcare value chains are resource intensive (Pedroso and Malik, 2012). They present critical relationships which facilitate the flow of products and services from manufacturers, to distributors, to providers to consumers, to intermediaries--who ultimately define how the products and services are paid for (Austin and Seitanidi, 2012, p. 729). This non-linear relationship, as graphically illustrated in Figure 1, indicates that all actors in the healthcare value chain do not have direct causal relationships with each other; however, they do interact in a systematic way. Consequently, their actions and activities affect all participants within the system.

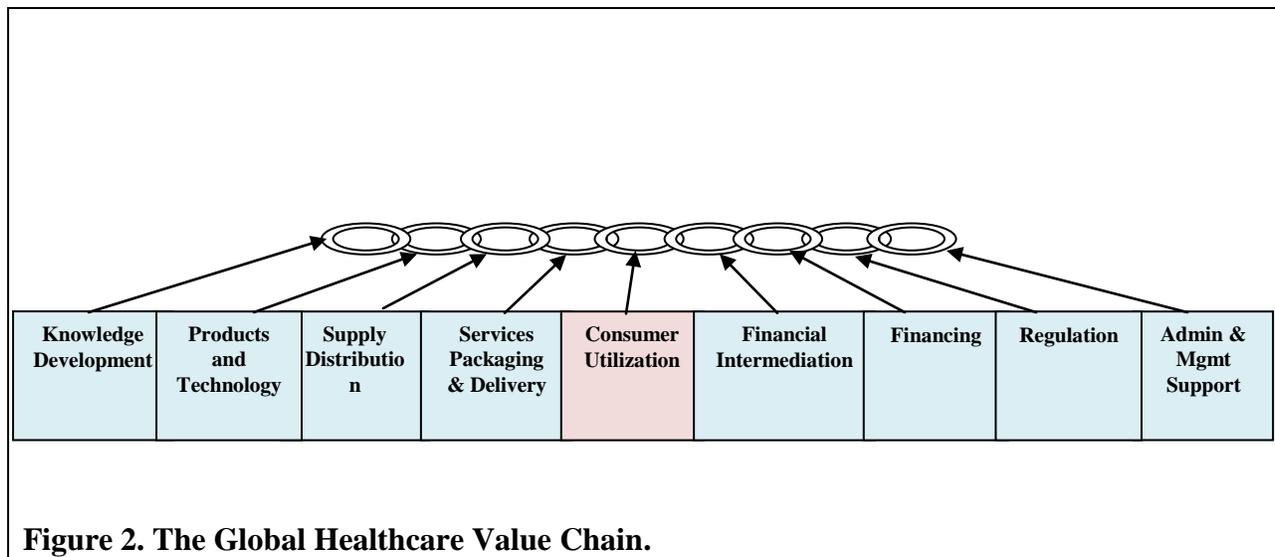


Current perspectives on labor issues within global value chains include the value network approach (Gummeson, 2008, p. 15). Within the competitive marketing context, researchers urge marketing scholars and educators to accept the complexity of marketing and develop and teach a network-based approach—balanced centrality—epitomized by the concept of many-to-many stakeholders, as opposed to many-to-one. Gummeson (2008) down plays the customer-centric emphasis (e.g., patient satisfaction) in value chains. Instead, he considered the system as a whole and suggested a balanced-centrality, wherein all participants have the right to satisfaction of needs and wants (Gummeson, 2008, p. 17).

Taking a consumer-centric perspective, the global healthcare value chain must have the capacity and capabilities to deliver value before and after the consumer has utilized products and services (Al-Abri, and Al-Balushi, 2014). Further, as care delivery improves, synergies are expected within intra and inter-organizational clusters (Eisingerich, Falck, Heblich, and Kretschmer, 2012). Intra-organizational clusters can be thought of as those actors (employees) and activities which interact within healthcare organizations. They are vertically aligned functionally and are necessary to deliver the services or products to the consumer. An example of this is complementary services (e.g. an in-house pathology laboratory) in an Enterprise Resource Planning system (ERP) which seeks to leverage the internal functional operation of the healthcare organization to achieve some form of competitive advantage (Porter, 2008, p. 86).

The global healthcare value chain consists of both vertical and horizontal linkages (Peppard and Rylander, 2006). Vertical linkage occurs when a firm seeks to leverage its competitive advantage using internal resources and strategies. Horizontal linkage occurs when a firm collaborates with external stakeholders, including service delivery partners, to compete in an international market. Based on recent research (Li and Whalley, 2002; Ricart-Costa, Subirana, and Valor-Sabatier, 2003), horizontal linkages appear to be the bedrock of global economic expansion within the healthcare arena. This is evidenced by the growth rate of virtual healthcare knowledge workers and medical practitioners utilized within global healthcare value chains. Currently, knowledge workers, such as medical transcriptionists (Stonefield, 2011), are rarely exclusively associated with vertically integrated organizations (Shortell and McCurdy, 2010). Also, telemedicine (Wootton, Vladzimirskyy, Zolfo, and Bonnardot, 2011) is now considered a means to enhance patient outcomes and sustainability (Coulborn, Panunzi, Spijker, Brant, Kosack, and Murowa, 2012) by providing local practitioners indirect access to radiologists located around the globe. For example, a radiologist located in Australia can interpret digital images of a U.S. based patient's digital image X-rays within minutes, enabling a local practitioner to make a correct diagnosis in a timely manner (Hawk, 2011).

Conceptually, the healthcare value chain consists of healthcare knowledge development; supply of products and technologies; distribution of supplies; services packaging and delivery; consumer utilization; financial intermediation; financing; regulation; and administrative and managerial support services (Pedroso et al, 2012, p. 2758). Figure 2, graphically illustrates the linkages of the global healthcare value chain and shows the customer-centric perspective of this type healthcare delivery system.



What constitutes value within the chain is the ability of developers, suppliers, distributors, and service providers to create and deliver value to the healthcare “consumer” (Burns, DeGraaff, Danzon, Kimberly, Kissick, and Pauly, 2002). Delivering value to healthcare consumers requires an integrated (Levine, 2008) and collaborative network (Dey and Nath, 2013, p. 7) between “customer-facing” participants, to the left of the healthcare consumer (upstream), and “customer-support” participants to the right (downstream).

Talent management vulnerabilities were categorized as issues impeding the management of healthcare talent acquisition, retention, and replacement processes and activities.

### Talent acquisition

Global healthcare value chains require competent credentialed workers to function effectively. Since local talent may not be qualified to practice medicine or provide clinical or administrative support, domestic healthcare providers may be required to acquire talent from foreign sources. A problem with this approach to talent acquisition is the credentialing process. Obtaining and certifying the credentials of foreign professionals can take months or even years. It is possible to advance a candidate through the recruitment phase of the talent acquisition process, only to find that their credentials are not available or sufficient to fulfill the requirements of the vacant position. This process is not only time consuming, but costly. Talent acquisition is a critical process when attempting to secure resources to operate global healthcare value chains. It is not uncommon to have resources, which provide critical services to consumers, located and managed by geographically and culturally dispersed management teams. Each position of responsibility that is vacant threatens the value chains’ sustainability. Healthcare providers are starting to invest in information technology (HealthStream, 2012), within the credentialing area to mitigate this vulnerability.

In a case study by Srivastava and Bhatnagar (2010), the authors conducted an exploratory qualitative study on employer brand for talent acquisition to determine the effects of branding strategies on the attitudes of potential employees towards the recruitment (acquisition) process. The authors found that the demand for intellectual capital—a cadre of highly skilled, independent,

internationally marketable and mobile individuals-is exceeding the available supply. Further the tight labor market gives highly competent employees many choices, especially in professional, information/knowledge-based, technical and service driven organizations (Srivastava et al., 2010, p. 25). The authors found that their independent variables, (employer branding and potential employee attitudes) positively influenced a potential employee's decision to join an organization that was considered a "good place to work". The results were operationalized by including non-working candidates and employed managers as potential employees. The study did not find the results to be generalizable because of the study's ethnocentric approach. The study's population only included India's workforce, which the authors concluded, had high levels of intelligence, low-wage propensity, and propensity for accepting mobile/foreign assignments.

## **Talent retention**

In a professional interview with the chief executive officer of a large talent management information systems company, it was stated; "Never before has the healthcare landscape been faced with so many significant changes converging at once, which is creating challenges among the healthcare workforce (McMahan, Bell, and Virick, 1998, p. 205). The industry is facing major issues with employee retention as demonstrated by the fact that 75 percent of new hires are being brought on to replace employees who left healthcare organizations," (API Healthcare, 2013). This issue is viewed as being critical (Vaiman, 2008, p. 6) to the sustainability of the healthcare systems located in developing countries, such as the sub-Saharan countries located in Africa. In developing countries, such as Africa, disease management is having a major impact on the retention of clinical professionals who provide diagnoses and treatment.

First, these countries often provide specialized training to their citizens, with the intent that the citizens will practice medicine within the country. Unfortunately, that is not the case because the citizens find that they can obtain higher wages and less threat to their own health (Aluttis, Bishaw, and Frank, 2014) by accepting clinical positions outside of their country of origin after completing their specialized education and training. An example of this is the HIV/AIDS epidemic in the sub-Saharan countries. Domestically trained physicians and nurses may begin their practices within the country; however, as they gain expertise, they are recruited away by European, Asian, and North American countries which lack workers in their countries to provide clinical care to their HIV/AIDS citizens. This not only creates what has come to be known as a "brain drain" within the sub-Saharan countries trying to care for people with the disease, but it also threatens the sustainability of the entire region's healthcare delivery system due to lack of qualified, skilled workers.

Secondly, this is an international problem because countries with healthcare worker shortages view the strategy of recruiting foreign clinical professionals as a solution to their labor issue. They do not view themselves as being part of a global healthcare system that requires labor management balance internationally. The result of the imbalance between healthcare worker/disease management capabilities, in a few countries, is that the disease state of those countries suffering from worker migration continues to get worse. So much so, that the sub-Saharan region of Africa now has over 90% of their population infected with the disease HIV/AIDS. From an international and world health perspective, this is unacceptable. It is further amoral because part of the solution to correcting the problem of worker migration from these areas in dire need of their services is economic (e.g. the need to increase wages).

## **Talent replacement**

As skilled workers exit or leave the countries that need their services most, global healthcare delivery service managers face the recursive problem of replacing them (Werther, Wachtel, and Veale, 1995, p. 23). Once a skilled clinical professional leaves, the manager must expend effort and incur replacement costs in an attempt to stabilize the healthcare delivery network. If the manager is unable to recruit a qualified replacement, the value of the healthcare delivery network becomes compromised. Existing workers become overworked, thus exposing them to greater health risks, such as work-related stress and disease susceptibility. Further, the cost of replacing an experienced healthcare worker in countries with known health risks is higher than those countries with less perceived health risks.

It could be said that the countries with high health risks to healthcare workers should attempt to educate, train, and hire their own citizens, but it is apparent that this process is not working effectively. This constitutes a global health problem that continues to be exacerbated by the continuous out-flow of qualified healthcare workers from the countries and regions that need them most. Many countries facing this problem cannot begin to manage succession plans (Rothwell, W. J. (2011, p 89) because they are in a constant state of crises when it comes to replacing employees who separate from the organization. It is as though these global healthcare value chains have zero bench strength, that is, no current contingency human resources to backfill critical open positions.

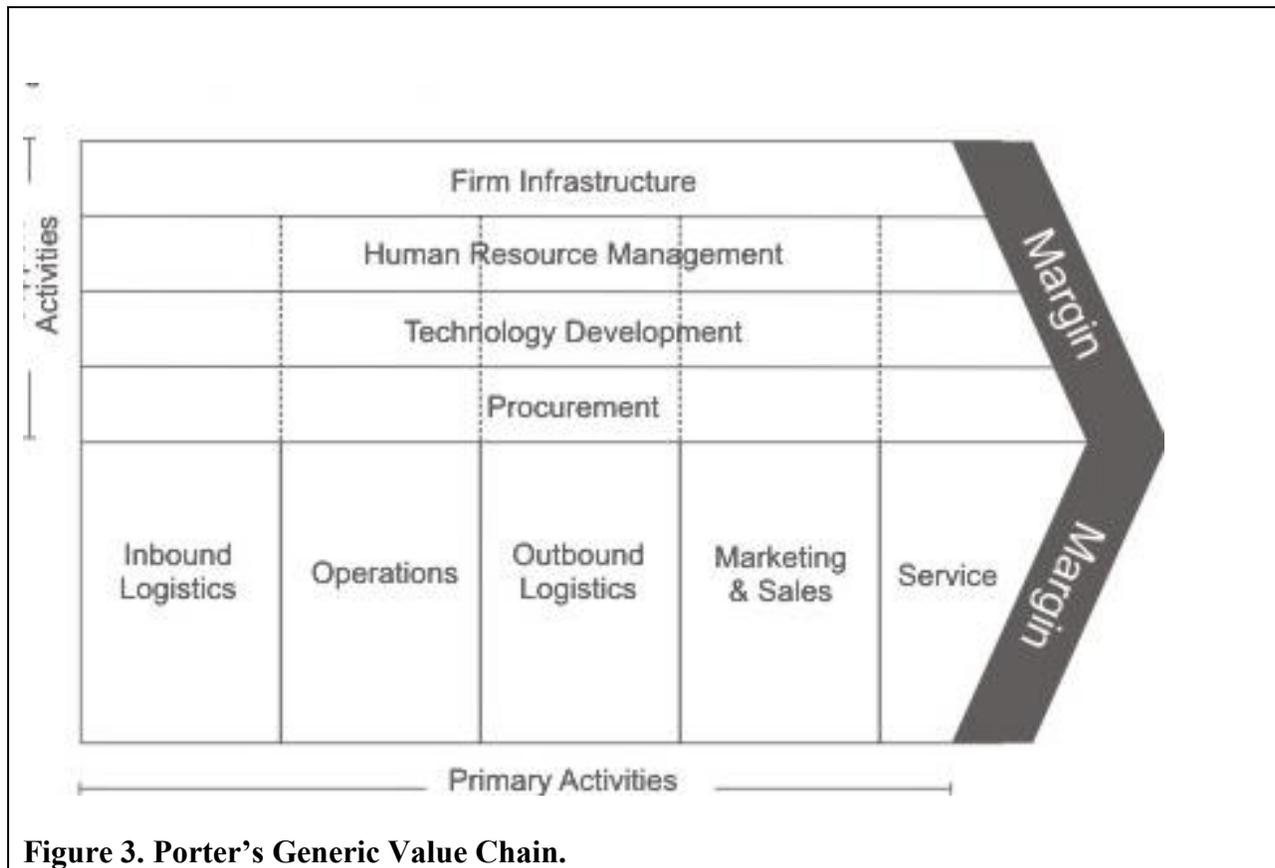
## **Current state of talent management in global healthcare value chains**

The current state of talent management in global healthcare value chains is precarious, at best. Developed and developing countries like the United States and China are experiencing a shortage of healthcare workers to meet current demand for services. Technology, e.g., digital imaging, is facilitating access to specialty clinical workers, like radiologists. While this is helping to save lives by expediting the diagnosis process; there are many healthcare disciplines that currently do not have access to advanced technology, e.g., physical therapy. Many of these healthcare disciplines are extremely labor intensive and require direct face-to-face contact with the end user of services (i.e. the patient). Staffing continues to be one of the main vulnerabilities within the global healthcare value chain. Other vulnerabilities include expatriate failure, worker mobility, and access to the growing field of knowledge workers in the service industries.

## **Analysis**

A starting point in analyzing talent management vulnerability is to consider the theoretical problem of the global healthcare value chain. Theoretically, the global healthcare value chain is becoming fragmented like other industry-specific global value chains (e.g. financial services, retail sales, and air transportation). Fragmentation is occurring within the healthcare industry, partly due to advances in technology and the growth of knowledge management. It is within the area of knowledge management, that talent management issues present themselves as vulnerability. This review explored the design of value chains in juxtaposition to the global healthcare value chain. Current issues, involving the management of talent acquisition, retention, and replacement, were explored for their contribution or detractor from consumer value.

How does one identify vulnerability within a value chain? Typically, this is accomplished using a value chain analysis (Porter, 1985). A value chain analysis views the value chain as a system involving a collaborative network of activities (See Figure 3).



**Figure 3. Porter's Generic Value Chain.**

### Primary Activities

Primary activities (the X-axis) relate directly to the physical creation, sale, maintenance and support of a product or service. They consist of the following:

- *Inbound logistics* – These are all the processes related to receiving, storing, and distributing inputs internally. Global healthcare supplier relationships are a key factor in creating value here.
- *Operations* – These are the transformation activities that change inputs (supplies, knowledge, and effort) into outputs (healthcare products and services) that are provided to consumers (patients). Here, the global healthcare operational system creates value.
- *Outbound logistics* – These activities deliver healthcare products and services to the consumer (patient). These activities include trauma/emergency care, problem/disease diagnosis, in-patient and out-patient services, and distribution systems to provide goods and services when and where they are needed by the consumer (patient). Delivery and performance of these healthcare products and services may be internal or external to a local healthcare provider or organization, but they are nonetheless part of the global healthcare value chain.

- *Marketing and sales* – These are the processes used to persuade consumers to purchase healthcare products and services within the value chain network instead of from competitors outside the value chain network. The benefits of the global healthcare value chain, and how well those benefits are communicated, are sources of consumer value.
- *Service (Value-added)* – These are activities related to maintaining value within the global healthcare network system for the products and services used by the consumer, during and after utilization.

## Support Activities

Support activities (the Y-axis) undergird the primary functions above. In Porter's diagram, the dotted lines show that each support, or secondary, activity can play a role in each primary activity. For example, procurement supports operations with certain activities, but it also supports marketing and sales with other activities.

- *Procurement (purchasing)* – This is commonly called the supply chain. This function within the value chain is used to get the resources needed to operate, or provide consumer/patient care. This includes finding vendors and negotiating best prices for the goods or services to be utilized.
- *Human resource management* – This function determines how well a company recruits, hires, trains, motivates, rewards, retains and replaces its workers. People are a significant source of value, so businesses can create a competitive advantage with good HR practices. It is within this function that global healthcare value chains have the most exposure to vulnerability.
- *Technological development* – These activities relate to managing and processing information, as well as protecting a value chain's knowledge base. Minimizing information technology costs, staying current with technological advances, and maintaining technical excellence are sources of value creation and competitive advantage.
- *Infrastructure* – This is a global healthcare value chain's support system, and the functions that allow it to maintain daily operations. Accounting, legal, administrative, and general management are examples of necessary infrastructure that businesses can use to their advantage. Within healthcare delivery systems, facilities, technologies, and supplier partnerships are all part of the value chain's infrastructure.

Global healthcare value chains use these primary and support activities as "building blocks" to create a valuable product or service for its consumers. The above analysis is based on an adaptation of Michael Porter's generic value chain analysis (Porter, 1985) and his Five Forces of Competition model (Porter, 2008).

## Findings

Although the global healthcare value chain is complex and may have significant barriers to entry (e.g., high labor costs), competition is still a force to be considered during any analysis of the chain. This paper provokes the question as to whether or not the Five Forces Model of Competition, as defined by Michael E. Porter (2008), is a sufficient tool to measure talent management vulnerability. It was found that the Five Forces Model of Competition is still a viable value analysis tool when considering global versus domestic competition. Competitive analysis is a key factor of any value chain analysis (Kim, Rhatigan, Jain, Weintraub, and Porter, 2010). Porter's model addressed competition using a firm's transaction costs as its unit of

analysis. However, a global healthcare value chain's unit of analysis is consumer value (Lee & Lin, 2011, p. 723). Consumer value takes into consideration the economic, environmental, and social contribution of individual firms within the value chain. Therefore, in order to address measurement of vulnerability within a global healthcare value chain, it is expected that one would conduct a competitive analysis (Porter, 2008) using consumer value as the unit of analysis.

Conducting a competitive analysis of a healthcare value chain is accomplished in research studies through the use of hybrid factors such as economic transaction costs, environmental and social impacts, relevancy, and quality of care delivery indicators (Basu, Andrews, Kishore, Panjabi, and Stuckler, 2012). These hybrid factors lend themselves to qualitative assessment (Ryan, 2013) to test and measure consumer value (Lee et al., 2011, p. 725). The operationalization of hybrid factors (costs, environmental and social impacts, relevancy, and quality of care delivery indicators), expose global healthcare value chains to external competitive threats, such as innovation and infringements of intellectual property rights; thereby, making them vulnerable to competing production and network structures (Giuliani, 2005, p. 27). External threats to the value chain may be anticipated and may enable the establishment of preemptive strategies to minimize such threats. In addition, the threats may actually reveal opportunities (Peppard et al., 2006, p. 133), such as new business development in emerging economies, which may prompt strategic and tactical responses to enhance sustainability of the value chain (Wang and Sarkis 2013).

Porter's Five Forces of Competition model, (Porter, 2008) provides the framework to analyze internal strengths and weaknesses and external opportunities and threats by categorizing them as the organization's Strengths, Weaknesses, Opportunities, and Threats (SWOT). This paper examined talent management vulnerability of healthcare systems (Pedroso et al., 2012, p. 2762), to determine if the vulnerability identified could be operationalized for applicability to global healthcare value chains using Porter's SWOT model. It was found that indeed, the SWOT model enabled operationalization of strengths (professional qualifications, credentials, and competencies), weaknesses (low wages, high employee health risks), opportunities (recruitment strategies and succession planning), and threats (competitive recruitment and employee migration). Each of these categories could be mapped to determine the degree of vulnerability (High or Low) existing within a global healthcare value chain. It was determined that the findings of this review were generalizable to the population that comprises a global healthcare value chain, as each of the participants in the value chain have vested interests in the chain's ability to provide consumer value.

### **Synthesis of the Findings**

A synthesis of the literature finds that global healthcare value chains are resource intensive. They rely heavily upon human resources, supplies, and clinical and ancillary services to operate effectively. Skilled labor, such as physicians, nurses, clinicians, and professional support services personnel dominate the global healthcare value chain. These resources have linkages with customers (patients) before, during, and after care is provided. Due to the strong dependence upon labor, global healthcare value chains are vulnerable and fragmented. An area of strength is the supply chain, which is an integral part of the global healthcare value chain (Chakraborty and Dobrzykowski, 2013). The global supply chain is well established (Morali &

Searcy, 2013), with many mature relationships. Manufacturers and supply distributors work very closely and often have customer relationship management (CRM) systems in place to provide efficiency within the supply chain. One need only view the response to an international crisis, such as a war, to understand the capacity and capabilities of the global healthcare supply chain.

While vulnerability exists within the global healthcare value chain, opportunities are present as well. The impact of digital imaging, the Internet, and telecommunications have opened new avenues to the practice of global healthcare. Having the ability to diagnose and treat patients using care providers located throughout the globe provides unprecedented opportunities to improve the health of our global society. Barriers to providing global healthcare are being removed due to advances in medical research, technology, and accessibility.

## **Results**

In developing countries, such as China, health issues are exacerbated by their national healthcare intermediary system. Since access to healthcare is based on their registered permanent address (Wokutch, Zhang, and Zhao, 2013, p. 187), workers migrating to distant parts of the country to seek employment cannot legally access healthcare services outside of their home regions. Social performance reporting in many of these countries does not measure the degree to which healthcare services are not being performed and the reasons for the deficiency (Margolis and Walsh, 2003, p. 273).

Developing economies address the issue of skilled labor deficiencies and vulnerability by using a worker production method called, clustering. Clustering is the practice of using local suppliers and workers to provide goods and services within the domestic economy (Nadvi and Halder, 2005). Once clustering is established, developing countries find that they must compete globally in order to grow their economy. This need gives way to de-clustering, or a practice called

Upgrading.

Upgrading is the process of making better products, making them more efficiently, or moving labor resources into more skilled activities aimed at exporting (Gummesson, 2008). Upgrading provides the opportunity to improve the wages of low-wage workers by giving them access to the global economy and to become stakeholders in the global value chain (Humphrey and Schmitz, 2000). For healthcare workers, this translates into improved education, training, and wages. Unfortunately, upgrading is also considered a vulnerability of global healthcare value chains because it is better suited for organizations that are already horizontally networked.

Foreign value chains with tight vertical clusters appear to be a dominant organizational structure in many developing economies (Lee, et al., 2011). This limits the efficiency of global value chains because they must wait until the vertical clusters are upgraded before they can become eligible to provide value to the chain. Upgrading also poses the risk that foreign countries and developed economies will recruit the upgraded talent. This, unfortunately, leaves the upgrading nation with a greater deficiency of skilled workers.

In addition, the cost of upgrading the skills and proficiency of national workers is typically born by their native country. When considering the replacement costs to fill employee vacancies, the picture becomes quite bleak for developing countries seeking to play a dominant

role in the global healthcare value chain. In fact, where they do play a role, they are subject to significant vulnerability.

### **Limitations of the Study**

Factors which limited the study include the newness of the topic and the lack of empirical studies which quantify the impact of global healthcare value chain vulnerability. This is not the case with global supply chains, which were reviewed using an interdisciplinary approach. A limitation of the paper is the lack of cross cultural studies that address global health and safety issues prompting the migration of skilled healthcare workers from developing countries to developed countries. Such studies would certainly enhance potential solutions to improve talent retention efforts, which would subsequently enhance sustainability of the global healthcare value chain.

### **Conclusion**

In summary, global healthcare value chains are becoming commonplace in our global society. Nations are increasingly sharing knowledge about clinical and technological advances in medicine and healthcare best practices. Interventional product manufacturers and supply distributors are finding ways to include consumers and patients located around the world to improve the validity and generalizability of their clinical trials and delivery systems. As developing economies seek access to affordable, quality healthcare, the international healthcare community is responding by providing supplies, services, and technology that can be accessed throughout the globe. The aim of this paper was to answer the review question, “What vulnerability threatens the sustainability of global healthcare value chains?” Labor issues, such as low wages, skill development, and healthcare accessibility threaten to weaken global healthcare value chains. The paper found that knowledge workers make up a large percentage of the resources needed to effectively operate a global healthcare value chain.

The shifting or migration of knowledge workers from distressed populations in need of their services to more affluent populations is threatening the sustainability of global healthcare value chains in developing countries. Advances in technologies, such as digital imaging and tele-radiology (Gamble, Icenogle, and Savage, 2004), are enabling local care providers to gain access to the world’s best clinical specialists to diagnose and treat patients, regardless of where they are located. For developing and emerging economies, access to quality healthcare has become an environmental, economic and social issue. Global healthcare value chains provide the means to define the components, processes, and relationships that exist in establishing a quality healthcare delivery system. Developing and emerging economies may not have the capability or capacity domestically to afford their citizens the same quality of care as developed economies; however, global healthcare value chains can present a consumer-centric (patient-centric) approach to healthcare delivery that minimizes or removes many barriers to quality healthcare for those economies. The global healthcare value chain can accomplish this by exposing vulnerability, as well as opportunities to providing quality healthcare globally, using value chain analyses which utilize consumer value as its key measurement and unit of analysis.

The implication of this paper for management practice is the need to invest in care provider knowledge acquisition and development, since this is a major component of the global

healthcare value chain. It is further implied that quality standards of care, care pathways (processes), and reporting of outcomes be developed and shared internationally.

Opportunities for future research lie in reviewing advances made by the National Institutes of Health (U.S. and foreign) and the World Health Organization in forging ways to further identify vulnerabilities and opportunities within global healthcare value chains. By utilizing a General Systems Theory perspective, the global healthcare value chain can be a platform to drive not just consumer (patient) value, but systemic value for all constituents of the value chain.

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