

Article

Toward Multi-Stakeholder Value: Virtual Human Resource Management

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Abstract: Some large organizations have used online virtual worlds (e.g., Second Life) in human resources (HR) in recent years, but few studies have explored how the values are generated by this technology and what factors have an impact on the performance of this technology. In this article we identify the delivery of HR functions in virtual worlds as virtual human resource management (v-HRM). In principle, v-HRM is an integrated HR strategy that enhances the management of human capital and increases the visibility of human capital to worldwide stakeholders through the establishment of an online virtual world. By introducing the features of v-HRM and summarizing the initiatives of v-HRM based on IBM experiences, we propose a model that examines the multi-stakeholder value of v-HRM. A qualitative study was employed to explore the impact of v-HRM on four types of stakeholder values through the insights from social shaping of technology approach. The case analysis results also show four types of v-HRM value facilitators. This model acknowledges how and what to implement with respect to v-HRM, and thus can be used to guide future research on v-HRM.

Keywords: virtual worlds; Second Life; virtual human resource management; HR transformation

1. Introduction

In the 20th century, human resource (HR) departments, an important function of organization sustainability [1], were called personnel departments, and these departments created procedures, forms, and levels of authorization to process personnel recruiting, payroll, attendance and leave, and performance appraisals. These departments also helped organizations meet the requirements of government laws, rules, and regulations relating to equal employment opportunities, occupational safety and health, and employee benefits [2]. Because the department's functions are largely administrative, the development of information technology (IT) focused on operational efficiency within these departments. Personnel departments implemented human resource information systems (HRIS) to automate their internal workflows [3]. By gathering, storing, integrating, and transforming HR administrative data into information that can be utilized in HR decision-making, HRIS can improve the quality and efficiency of HR departments and can relieve the administrative burden of HR's day-to-day duties [4].

As more transactional services became provided electronically via HRIS, HR personnel obtained greater opportunities to focus on human relations tasks, such as training, development, employee relations, and total rewards. By the end of the 1980s, personnel departments had generally been renamed HR departments. This development marked the first wave of the transformation of HR departments [4]. However, HRIS were insufficient for the new role of HR departments. Line managers and employees increasingly believed that information systems should not only improve HR processes

in terms of business planning and personnel capabilities but also allow company employees to manage their own personnel information [5]. During the 1990s, electronic human resource management (e-HRM) emerged due to the growth of corporate intranets. In contrast to HRIS, e-HRM extends beyond traditional HR-related administrative functions to provide a web-based HR channel for the entire organization. In fact, e-HRM is an umbrella term that covers all of the possible integration mechanisms and content of HR and IT [6], such as HR portals, talent profile mapping, e-learning, and human capital dashboards. The primary goal of e-HRM is to support decision-making and to provide self-service capabilities for internal corporate stakeholders, including employees and line managers [7]. Thus, HR has become a business partner that helps align business functions with HR-related policies and practices. This evolution constitutes the second wave of the HR transformation.

However, alterations in HR functions are expected to continue. In the late 1990s, *Fortune* magazine published a story about “blowing up the HR function”; this story indicated that HR was not considered to be a department that adds strategic value to a firm [8]. As business partners, HR departments can deliver immediate HR services, management decision support, and human capital metrics, but they cannot deliver business results [9]. Therefore, HR is expected to cease being a passive business partner and instead becomes a proactive business driver that seeks solutions that involve and influence the perspectives of external stakeholders (i.e., investors and customers) and thereby directly impact business results [10]. Although the management of external stakeholders is traditionally the domain of sales, marketing, and public relations, the expansion of HR into this new territory can allow these departments to follow a top-down process to derive service strategies that are driven by outcome measures. For example, by connecting with customers, HR can ensure that a firm’s talent acquisition, development, reward, and retention programs all function to encourage the skills that are required for customer satisfaction. Connections with investors can allow a firm’s intangible assets, including its quality of leadership and human capital, to be observed in a manner that is not evident from its financial reports; thus, these connections can provide investors with confidence in a firm’s future earnings [11] and corporate social responsibility [12]. Therefore, the shift of HR departments from passive business partners to active business drivers is projected to be the third wave of HR transformation.

Notwithstanding the global economy has forced many HR departments to operate with limited budgets, raising questions about how HR value can be most efficiently delivered for both internal and external stakeholders [13]. Many organizations are turning to Web 2.0 and social networking sites to promote and deliver information to their target audiences [14]. The most interactive way of sharing this information involves virtual worlds that provide three-dimensional (3D) graphics, self-determined gameplay, user-created content, and lifelike human interactions [15]; these traits differentiate virtual worlds from other social media and render these virtual worlds particularly interesting for corporate purposes [16].

We identify the delivery of HR functions in virtual worlds as virtual human resource management (v-HRM). In principle, v-HRM is an integrated HR strategy that enhances the management of human capital and increases the visibility of human capital to worldwide stakeholders through the establishment of an online virtual world. These online virtual worlds allow companies to conduct recruitment centers, job fairs, new employee onboarding, orientation, corporate universities, outdoor training, and networking in an internet-based, simulated environment that represents the real world. The strength of v-HRM is that it enables HR professionals to interact with stakeholders in real time via personalized avatars and to demonstrate HR practices in a 3D virtual environment, and therefore to shape and co-produce HR practices by engaging different stakeholders

The IT profile of HR transformations is illustrated in Figure 1. HRIS comprises the technology and processes to automate HR administrative activities. It focuses on the HR staffs’ requirements. E-HRM uses information technology as a medium to support HR, employee and management in executing HR activities and self-services. The target group of e-HRM is not the HR staff but the internal stakeholders outside the HR department: the employees and management. V-HRM adopts virtual

technologies to involve different stakeholders in co-delivering HR services. With v-HRM, the HR value is a co-production by engaging both internal and external stakeholders.

Although v-HRM is the emerging HR technology with value-creating networks, there is little understanding of what the impact of this technology and there is a clear need to motivate and shape v-HRM development. Therefore, we collaborate with IBM to conduct a case study to investigate the impact of v-HRM from a profit organization's perspective. IBM is one of the leading companies that launched v-HRM initiatives in Secondlife.com, one of the major virtual world platforms. This study was conducted under the support of IBM v-HRM initiatives and involved interviews of IBM internal and external stakeholders.

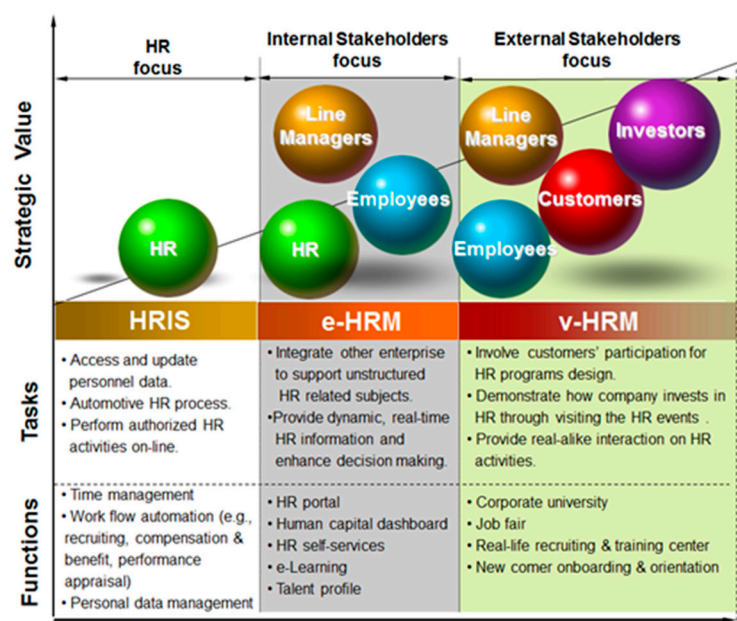


Figure 1. The information technology (IT) profile of human resources (HR) transformations.

2. Conceptual Background

2.1. The Emerging HR Technology: V-HRM

Since the beginning of the 21st century, the internet has provided a dynamic visual platform that allows users to interact in communities and to share information in real time. Social media play a significant role in the modern internet and online communities are taking on a new dimension, quite literally, in the form of immersive 3D virtual worlds. Surprisingly, 80% of active internet users have registered accounts in virtual worlds [17], such as Active Worlds, OSGrid, and Second Life.

Virtual worlds, which are sometimes called digital worlds or metaverses, are computer-based simulated environments that are typically modeled on the real world and accessed through an online interface [18]. They are inhabited by users in the form of avatars, which are representatives of real people in the virtual world [19]. A virtual world monitoring service, the number of worldwide registered accounts in virtual worlds approached 1.4 billion as of the end of the second quarter of 2011, representing an overall growth rate of 338% from approximately 414 million global accounts in slightly over two years [20]. The growth of various virtual worlds that has occurred around the world in recent years has prompted a number of Fortune 2000 companies to either enter virtual spaces or to monitor the development and potential of avatar-based business initiatives [21].

This technological development has produced radical changes not only for business functions but also for supporting functions, such as HR departments [22]. In contrast to a linear and simplistic understanding of the expectations of this technology or a socially deterministic approach that privileges

user behavior, this study adopted social shaping of technology approaches [23] that acknowledge the ways in which virtual worlds both shape and are shaped by social practices [24], such as stakeholders engagement. Accordingly, the concept of v-HRM addressed in this article is in line with “Virtual HRM”, which is defined by Lepak and Snell (1998) as “...a network-based structure built on partnerships and typically mediated by information technologies to help the organization acquire, develop, and deploy intellectual capital” [25]. Furthermore, while HR technological determinism focusses mainly on the common outcomes of technology, v-HRM takes a deeper look at how HR professionals and their stakeholders co-shape the HR initiatives and how they co-create value for business impacts. Therefore, v-HRM is seen simultaneously as a driver and as the object being assigned tasks by HR professionals and their different stakeholder to be a part in solving HR problems. The process of joint and mutual learning through co-production from different players have called for innovation approaches to satisfy both internal and external stakeholders by value-creating networks [26,27].

We emphasize four characteristics of v-HRM that differentiate it from other IT applications in the HR context. First, v-HRM allows HR professionals to create computer-simulated environments. These types of environments provide users with detailed 3D graphics and animations; various communication methods, including voice communication; features for personalization and for building new objects; and an enormous number of available places and objects that are created by others [28].

Second, v-HRM allows HR professionals to create fully customized virtual self-presentations in the form of avatars and to provide an informal, anonymous atmosphere [29] in which stakeholders can ask questions and receive answers from real individuals.

Third, unlike many two-dimensional content communities, such as Facebook, avatars within virtual worlds have the potential to explore their virtual environments in three dimensions; thus, navigation within virtual worlds is similar to real-world experiences [30]. The v-HRM therefore allows HR departments to hold consultations, meetings, workshops, and classes in a dynamic environment that facilitates trust and enhances communication through a sense of presence and the sharing of a space with others.

Finally, in contrast to anonymous chats and webcasts, v-HRM allows participants to interact with a wider audience and to use this collaborative environment for marketing, meeting, communication, training, and collateral events on-line and face-to-face on a global scale [31] without requiring stakeholders to expend time and money on travel.

2.2. IBM v-HRM Initiatives in Second Life

Second Life is a dominant v-HRM platform, especially for corporate and educational institutions [21]. As of December 2010, 1400 organizations, including universities and Fortune 500 companies, had presences in Second Life [32]. IBM has explored v-HRM initiatives for various purposes [33]. In particular, these objectives include providing corporate universities and training centers; job fairs and recruitment centers; onboarding and orientation; and team-building activities.

Corporate Universities and Training Centers: IBM holds a virtual Human Capital Management University in Second Life; in the context of this virtual university, trainees can crawl around a large oil rig or fly around a network diagram, allowing training professionals to illustrate technical concepts in powerful new ways. IBM employees practice their interviewing techniques in front of an audience that will later critique them. Another popular application at IBM is language classes. Second Life provides a venue for the company to host video conferencing and webinar activities. In addition to IBM, Johnson & Johnson Pharmaceutical Research and Development, L.L.C. (J & JPRD) has developed a 3D world in Second Life that is designed to orient nearly 1500 new employees to the company's health benefits and ethics policies. Dell has recreated a giant computer on an island in Second Life. Avatars can enter this computer to discover how these types of devices really work. The retail bank Wells Fargo built a site in Second Life. This island teaches users the basics of managing real money by enabling avatars to earn money by answering financial questions [34].

Job Fairs and Recruitment Centers: IBM launched a virtual recruitment center through Second Life that allows prospective applicants and employers to engage in interactive recruitment dialogues. Applicants can seek either private or public dialogues to clarify employment-related questions or concerns. Furthermore, the virtual recruitment center can conduct corporate recruitment fairs and events to discuss job expectations, company culture, and specific applicant issues. In Second Life, job seekers can interact directly with recruiters and can ask questions about the company as a whole or a particular position of interest. Job applicants can also leave their resume with recruiters and can subsequently be called for virtual interviews with the line managers.

Onboarding and Orientation: IBM recruitment offices are available 24/7 in Second Life. IBM leverages the virtual world to conduct the onboarding of its global workforce. New IBM employees who are separated by thousands of miles are able to mingle, interact, and share ideas in the virtual world prior to their first days on the job. Furthermore, new employees from various countries meet in a common HR site to learn about IBM's core values and about employee collaboration with respect to solutions. The goal of these virtual initiatives is to expedite the orientation of new employees and improve mentoring relationships.

Team Building: IBM's employees can schedule parties with presentations and dancing on IBM's island, which supports new types of human interactions that benefit from users' essential visual nature and intelligence. Virtual worlds are convenient for employees because they can provide training that may otherwise have been canceled due to travel restrictions. Virtual worlds can also eliminate the travel costs of meetings. For instance, one program that was moved from a conference format to Second Life included participants from different countries. IBM frequently holds meetings that involve interactions among real participants in a conference room and the avatars of remote participants, which are displayed on a screen. The participants can chat, gesture, and interact in Second Life. An IBM team leader can virtually send his or her team members overseas to meet the personnel of an outsourcing partner without extreme expense and disruption to family lives.

Table 1 summarizes the functions of v-HRM implemented in IBM and compares HR activities before and after the implementation of v-HRM.

Table 1. The use of virtual human resource management (v-HRM) to facilitate HR activities in IBM.

Functions	Before v-HRM	After v-HRM
Corporate University and Training Center	<ul style="list-style-type: none"> • Training sessions were provided in a regular classroom or a two-dimensional (2D) e-learning environment. • There were limited possibilities to create realistic simulations and interactive learning environment without high costs and risks. 	<ul style="list-style-type: none"> • Training sessions can be provided in a three-dimensional (3D) virtual space that models a real classroom. • Course content can be enhanced through the simulation of complex business activities and the execution, recording, and playback of business scenarios.
Job Fair and Recruitment Center	<ul style="list-style-type: none"> • Various efforts were required for company promotion, job posting, resume collection, candidate screening, and job interviews. • Candidates had little opportunity to demonstrate hands-on skills and experience realistic job contexts and requirements. 	<ul style="list-style-type: none"> • Recruitment and selection activities can be conducted in a simulated face-to-face environment without limitations of space and time. • Candidates are able to participate in virtual job tryouts in which they are asked to complete specific tasks that their jobs would require.
Onboarding and Orientation	<ul style="list-style-type: none"> • The social activities of newcomers were conducted in physical locations without consistent content and were restricted by location. 	<ul style="list-style-type: none"> • Newcomers from various countries can meet in a common HR site to learn, collaborate, and establish connections in a virtual location without travel requirements.

Table 1. Cont.

Functions	Before v-HRM	After v-HRM
Team Building	<ul style="list-style-type: none"> It was difficult to coordinate the physical assembly of team members around the globe for meetings or team-building sessions. 	<ul style="list-style-type: none"> Team members can work through a fun and immersive virtual team environment to build activities together on a global scale with low traveling and communication cost.

2.3. The Impact Framework—A Conceptual Model

Based on the previous literature reviews, we develop the impact framework to understand the business impacts of v-HRM (Figure 2). We propose that the impact would be manifested at the level of the implementing v-HRM initiatives in enterprises and, ultimately, at the level of stakeholders. Four v-HRM initiatives that are identified in the above section are expected to deliver value to four different types of stakeholders: employees; line managers/employers; customers, and; investors. We focus on exploring the stakeholders' views and attitudes towards the v-HRM initiatives, and what value components are perceived by different types of stakeholders. In addition, past literature has shown that the potential value of virtual worlds can be influenced by different facilitators [35], and thus we aim to identify v-HRM facilitators that can drive the values that are realized by stakeholders.

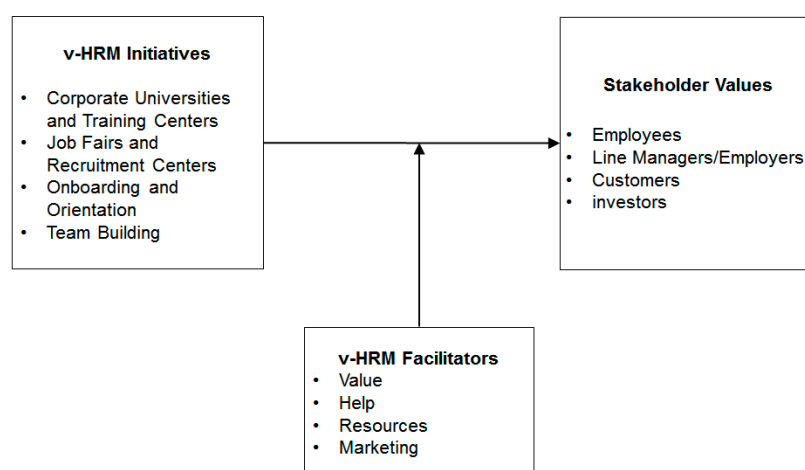


Figure 2. The impact model of v-HRM.

3. Research Methodology

3.1. The Emerging HR Technology: V-HRM

A qualitative research of IBM with direct interview approach was employed in this study. To identify suitable participants involved in the interviews, a purposive sampling method was adopted, which is one of the nonprobability sampling methods used in qualitative research [36]. The participants were invited through the “IBM Virtual Universe Community” in LinkedIn.com where they can represent IBM’s employees, managers, customers, and investors. There were 25 LinkedIn members who were interested in participating in this research program on a voluntary basis, but only 10 participants have registered an account in Second Life and have experiences with the virtual HR events conducted by IBM. The 10 participants include three employees, two line managers/employers, two customers, and two investors. The report of the findings in this study was mainly based on the experience of the participants who involved in IBM v-HRM initiatives in Second Life. We present the summary profiles of the participants in Table 2.

Table 2. Profile of participants.

Pseudonym/Coding	Gender	Age	Location	Occupation	Stakeholder Type
A	Male	31	USA	Learning Technology Consultant	Employee
B	Male	28	Sweden	IT Architect	Employee
C	Female	35	Italy	Sales	Employee
D	Male	37	USA	Enterprise Manager	Line Manager/Employer
E	Female	40	UK	Design Director	Line Manager/Employer
F	Female	35	The Netherlands	IT Manager	Customer
G	Female	36	Denmark	Hosting Owner	Customer
H	Male	32	USA	Product Manager	Customer
I	Female	34	Germany	Financial Analyst	Investor
J	Male	36	Hungary	Fund Manager	Investor

3.2. Data Collection

The interviews, which were carried out in a semi-structured manner, allowed the researchers to address the issues or areas “that appear promising from the point of view of providing rich data and/or additional insights” due to the flexibility of being able to have the questions centered around “pre-determined issues and topics, but not in a rigid manner or necessarily in a rigid manner” [37]. In other words, such an interview offered the researchers an opportunity of capturing much richer data valuable to the intended inquiry [38]. In this study, the interviews were intended to examine the perceived value of the v-HRM initiatives by the four different types of stakeholders and to identify potential v-HRM strategies that can facilitate the value realization. The interviews were recorded and fully transcribed into text for analysis.

The interview questions covered four major themes: perceived value from the HR initiatives (e.g., Do you think that the Corporate University and Training Center in this virtual world can create value for you? Why or why not?); factors that affect effective HR initiatives (e.g., Do you think that there are any factors that make you unable to receive the value from Job Fair and Recruitment Center in this virtual world? Why or why not?); technical problems during the participation in the HR initiatives (e.g., Are there any reoccurring technical problems you have experienced during participating the Onboarding and Orientation in this virtual world? Are you able to cope with them? Why or why not?); and the role of HR for facilitating the effective HR initiatives (e.g., What do you think of the role of HR in facilitating effective team building in this virtual world?).

3.3. Data Analysis

The analysis of interview data was made based on the thematic analysis from a phenomenological perspective [39]. The interview data were first classified into themes by segmenting and coding the text into categories that highlighted what the interviewees experienced the v-HRM initiatives. Some of the barriers to implement the v-HRM were also obtained from the interview. Detailed presentation of the business impacts of v-HRM for the HR’s stakeholders was discussed in the next section, followed by the v-HRM facilitators that are identified from the data analysis result.

4. Results and Discussion

4.1. The Value Impacts of V-HRM on Different Stakeholders

4.1.1. The Value Impacts for Employees

In the virtual world, the course content can be enhanced through the simulation of complex business activities and the execution, recording, and playback of business scenarios, which increases trainee’s participation and satisfaction. In addition, the onboarding and orientation offered in the virtual world allows newcomers from various countries to meet in a common HR site to learn, collaborate, and establish connections in a virtual location without travel requirements. One of the employees involved in the focus interview made the following comment (C):

“IBM has been investing time to find new ways to do onboarding more effectively in Second Life and other 3D virtual worlds. IBM recognized early on that onboarding starts well before an employee steps through the office door on their first day, and that the product specialists who may be required to brief and coach new hires can’t be in two places at once.”

Furthermore, the virtual world has become a tremendous team-building tool, and the team members can work through a fun and immersive virtual team environment to build activities together on a global scale. This approach enables globally distributed teams with low traveling and communication cost, and improves the visibility of the presence and work of cooperate teams.

“IBM employees separated by thousands of miles will be able to mingle, interact and share ideas in the virtual world before their first day on the job . . . we could virtually meet in these worlds to do some other things—maybe get to know one another a little bit better, build some relationships with other IBMers around the world, practice doing things that we would need to do,”

said an IBM ex-employee (B).

4.1.2. The Value Impacts for Line Managers/Employers

While the training sessions can be provided in a 3D virtual space that models a real classroom, employers can engage more trainees in learning environment without physical space and time restrictions and safety concern. Besides, recruitment and selection activities conducted in the virtual world allow employers to ensure that candidates have the necessary technical skills, and the activities also provide insight into not only candidates’ personal styles but also their communication and social skills.

“Essentially, as a character in Second Life, you become an actor in an environment that’s simulating the context of what you do in your job, and we can record the whole thing. One of the advantages of the virtual world is that you can manipulate the sense of scale and perspective . . . We can miniaturize large systems such as our digital health solutions with remote access, or blow up a computer chip,”

said an IBM Design Director who participated in this learning program (E).

While candidates are able to participate in virtual job tryouts in which they are asked to complete specific tasks that their jobs would require, organization can promote employer branding through immersive experiences. Therefore, recruiting in the virtual world is not only an extremely cost-effective way to hire for organizations, but also a good channel to marketing employer brand for potential employees. Moreover, onboarding and orientation cost can be highly reduced while organization can provide virtual contact with newcomers that facilitates unified core value education and socialization within an organization in an observable environment. This is made salient by one of the interviewees who represent the line managers/employer (D):

“Since we use Second Life to conduct virtual meeting or onboarding, it not only saves thousands of dollars in travel costs, accommodation and carbon emissions, but provides an avenues for candidates to find out more about employers and the people that work there . . . in Second Life, our recruiters can talk to candidates, create virtual job fairs, and provide a variety of other cool candidate experiences . . . For most people, they know working at IBM carries with it a certain professional status, and so they work the same in that virtual world as they do in the real world. For new hires or potential candidates, there didn’t seem to be a distinction either.”

4.1.3. The Value Impacts for Customers

Although IBM and many organizations have initiated HR programs in Second Life and other virtual worlds, it is rare to discover HR departments that utilize virtual worlds to enable external

customers to interact with HR programs. Asked for an example of a customer experience in Second Life as follow:

“I was impressed by the interactive nature of the IBM virtual conference. The tools and approach may inspire our HR to re-examine how we can use our own Second Life environment,”

said an IBM business user (F).

HR can collaborate with marketing and sales to connect with external customers through virtual worlds and obtain a greater understanding of the needs and expectations of these customers. Moreover, HR can engage target customers in HR practices and can ensure that the firm’s employee staffing, training, rewards and communication programs all encourage the competencies that are required for customer satisfaction.

“Accessible through Second Life, it is unique because it is staffed by real IBM employees from around the world, not robots or kiosks . . . the IBM avatar can work with the client avatar up to the point of demonstration, exchanging information, and helping to solve a business problem . . . It is also a good place for testing new ideas and models When you bring the customer experience into HR function, it may offer a new way for the HR to engage with their real paycheck payers,”

said an IBM business user (G).

For example, a company can invite its customers to attend training events in the learning center region of Second Life. Customer comments can help the company’s HR department confirm that the training will help employees develop skills that customers appreciate. Customers can also be invited to recruiting and networking events that are hosted in Second Life. By observing employee behaviors at these events, companies can obtain information about the skills, values, and norms that customers expect from key employees. McKinsey & Co. ran an online simulation called CEO of the Future, in which players from around the world were asked to launch a new product and manage it against competitors. The winners were invited to present their strategies to McKinsey’s partners. Similar activities in which customers were invited to join games that evaluated McKinsey’s professionals could be hosted in virtual worlds; these activities could increase the perceived value of the firm’s products and services.

Moreover, including targeted customers in virtual HR events can increase customer commitment to the firm and business opportunity in a timely and cost effective manner. For one example, IBM opened a leadership training program to an emerging business client and its management team on Second Life. When IBM shared the learning program with the potential customer, IBM benefited by learning how to better think and act in the new market from the interaction experience in the virtual world. This initiative helped IBM secure and deliver major contracts with another customers in the developing market.

4.1.4. The Value Impacts for Investors

The use of virtual worlds can allow investors to visit and attend events that relate to human capital management or corporate social responsibility. This potential advantage, however, is rarely noticed by organizations as seen from the following comment:

“Even though IBM has a presence in Second Life, many investor relations professionals and Inventors still don’t know that this ‘world’ exists,”

said an IBM stock investor (J).

KPMG, Manpower, the NBA, RBS, and Yell, for example, have recreated their real-life headquarters for recruiting in Second Life. Also, IBM leverages the virtual world to onboard their

global workforce from various countries in a common HR site; at the same time IBM created and facilitated a team-building activity in Second Life, which would help their members spread around the globe collaborate and communicate more effectively. These simulations provide an opportunity for the HR departments of the aforementioned firms to invite investors to meet in the company's virtual offices and conferences, regardless of the physical locations of these investors. HR can use this platform to promote the company's core values, identity, and HR policies, allowing institutional investors to examine the shareholder value that these principles generate. Wipro, a global IT outsourcing giant, established a campus on Second Life for learning and development. Wipro was then able to use this virtual campus to enhance investors' confidence by demonstrating its ability to deliver future earnings. One of the interviewees who made the following comment on v-HRM performed with investors (I):

"When I initially planned to talk about IBM's HR activities performed in Second Life, I was going to focus on how IBM HR could use of the virtual world to demonstrate its human capital for their investors. After visiting their Island of Human Capital Management University in Second Life, I was convinced that it might also be a useful platform for investors to parse information in the hopes of gleaning some undiscovered insight."

Becoming the architects of human capital can vastly improve investor confidence, beyond the tangibles [11]. However, it would be difficult to boost the investors' confidence by simply disclosing your HR data or videos on the company portal. It would be not practical to invite your investors to work with your workforce and perceive the intangibles. In the 3D virtual world, you can invite your investors to join and observe how you hire, develop and remain human capital with real touch without interruption, and accordingly trading the intangibles into a premium.

According to the data analysis from the interviews, we summarize the value impacts of v-HRM on stakeholders in Table 3.

Table 3. The value impact of v-HRM on stakeholders.

V-HRM Initiatives	Employees	Employers	Customers	Investors
Corporate University and Training Center	Trainees' participation and satisfaction	Training cost savings and safety	Knowledge of customers' needs	Enhancement of intangible asset evaluation
Job Fair and Recruitment Center	The growth of employment reputation	Reduction of cost per hire	Competencies for serving customers	Confidence of future earnings through human capital
Onboarding and Orientation	Low departure rate of new employees	Reduction of onboarding and orientation cost	Promotion of customers' value propositions	Promotion of shareholder values
Team Building	Cooperation in a global work team	Reduction of traveling and communication cost	Increased perceived value of products and services	Promotion of shareholder values

4.2. The Facilitators for V-HRM

As discussed above, v-HRM may constitute the next wave of HR evolution, allowing new HR practices to be created in 3D virtual worlds. Virtual worlds may become simply another form of media that HR can use in the short term to reach a segment of highly creative and technologically advanced users. These worlds may also represent the beginning of a new area of HR that involves providing services to stakeholders by filling the missing pieces for external customers, investors and other communities. However, not all HR projects experience this type of success in virtual worlds; there are also challenges involved in shifting from the real world to the virtual world [40]. The IBM respondents of in-depth interview heightened some success factors in v-HRM, and we translate those success factors into four facilitators that HR departments should particularly note, which play as value facilitators of the impact framework (as shown in Figure 3).



Figure 3. The v-HRM facilitators.

Value: To sustain the use of v-HRM, users must perceive the value of applying the virtual world technologies [41]. First, v-HRM provides an informational channel through which stakeholders can obtain insights about a company. Companies can instruct HR personnel to create avatars that can engage in discussion with HR's stakeholders and involve these stakeholders in the evaluation of HR policies and procedures, thereby allowing these firms to deliver HR services that are in accordance with stakeholder values. A line manager commented (E):

"Second Life is interesting, but one difficulty is that you don't know whether the users are actual owners of the company, or what their ownership status is. We have the service call, we have the webcast, [and] we have a customer voicemail line. This is just another channel where IBM has established a very real corporate presence. But IBM is also investigating other virtual worlds like Multiverse.org, ProtonMedia and Forterra."

Second, v-HRM allows companies to create a long-lasting social atmosphere for job fairs and organize learning games and contests that integrate various forms of socialization and permit the sharing of experiences. One popular use for v-HRM is to augment learning experiences that cannot be replicated in a physical classroom because they may be too dangerous or too costly [42]. In addition, a created asset can be left behind, so to speak, in the virtual world for trainees to interact with at their own pace. An employee outlined his view on this matter (A):

"Trainers can create situations/scenarios not possible in the real world such as visiting outer space, flying through a human cell, exploring a location in prehistory or time travel in this virtual world. Moreover, Second Life is very 'green' [it virtually eliminates the carbon footprint] It [Second Life] is about more than just delivering learning—it creates a base for high quality education or business social networking and a means of delivering both internal and external customer training and developing company culture."

Help: Assistance is required for users to explore virtual worlds if stakeholders are not IT professionals with money to devote to high-end computers and fast internet connections [43]. Users have found that the technology underlying virtual worlds is unintuitive and can be difficult to learn and use [44]. More than an hour may be required for the design of a single avatar [45]. Many participants experience difficulty with the interface and basic actions of virtual worlds, even after they have completed their orientation procedures [46]. Moreover, effort is required to register for a virtual world account and design an avatar [47]. We cannot assume that everyone will be either comfortable or skilled in virtual environments. Therefore, the challenge for companies in the virtual world is to increase the awareness of non-members about HR-related efforts, provide the initial technical training and communication with respect to the technical requirements of v-HRM, and convince users that the virtual world is a good and efficient environment for participating in

HR events. It is important to make it straightforward for new entrants to learn how to explore a site. A customer shared his experience in the virtual world (H):

“I’m not very technically inclined, and its [Second Life] interface has a plethora of buttons and menus and finding what you need isn’t obvious. I have had a few conversations recently with new arrivals who were frustrated with rezzing [a Second Life object/prim can be done by dragging it from a resident’s inventory or by creating a new one via the edit window] times and lag. Some of their difficulties can be solved by changing settings, but they don’t know that.”

Resources: Virtual worlds are not free; similarly to real life, money is required to develop HR programs and to build in virtual worlds [41]. Therefore, companies could pay for stakeholders’ presence and then co-create value on their HR islands and could help to solve the issue of limited traffic to their corporate presence by investing any required resources into the development of these virtual presences. A virtual world that lacks content is pointless. A key motivation for spending time in Second Life is to have fun [19]. Therefore, HR departments must dedicate financial and non-financial resources to propose new and exciting opportunities to maintain the interest of users. The quickest way to become a ghost town in Second Life is to set up shop in a virtual world “just to be there” [17]. An investor stated (I):

“Despite entering Second Life to much mainstream media fanfare, many companies like . . . have so far failed to attract even 500 weekly visitors each. Although 80% of Fortune 500 companies have a virtual world presence, most of them are still struggling to even be noticed.”

Given the characteristics of hyperreal virtual worlds, avatars expect firms to perform unrealistic feats in virtual contexts. For example, in August 2007, the soft drink giant Coca-Cola invited 100 selected Second Life residents, including one avatar representing the rock star Avril Lavigne, to its virtual Coke cinema for the premiere of “Happiness Factory-The Movie”, a virtual complement to the launch of Coke’s new real-life “Happiness Factor” advertising campaign. Because few Second Life users would ever have the chance to participate in a similar event in real life, these types of activities are likely to be successful.

Marketing: To maximize the value that can be achieved and enhance the return on investment in v-HRM, effective marketing strategies are important for recruiting real-world stakeholders into the virtual world and retaining them through positive interactions [48]. First, users may be intrigued by content that is difficult to access in the real world, such as a replica of the real-life headquarters. Second, HR departments can generate value by providing new and interesting attractions that differentiate the virtual environment from real-world content through instant messages, postings, avatar interactions, or virtual exhibitions; these methods of communication can allow a company to maximize the returns that are generated from the resources that it invested to create a presence in the virtual world [49]. A line manager suggested that (E):

“A virtual world, such as Second Life, has its own culture, much in the way countries have their own cultures. Companies trying to successfully move into the foreign market typically hire people or firms to help them make that transition. Is this what we need to develop and a service that needs to be offered for those considering a move into the virtual world? This is an important question to explore if HR want to ensure successful v-HRM deliverables.”

4.3. Implications

This paper has several theoretical implications. First, the study is among the first attempts to study v-HRM and specialize in its business impacts. The case study provides evidence on the appropriateness of using virtual worlds to deliver HR business impacts, which is consistent with the findings of Lin’s

HR technology innovation model [3] and Ulrich et al.'s HR transformation model [11]. Furthermore, the study extends the past literature to study the impacts of various perceived attributes of 3D virtual worlds on the extent of HR deliverables and the impacts on business.

Second, the results of this study suggest that v-HRM initiatives can cultivate the HR transformation from the outside in [9], especially through the HR co-creation activities with customers and investors. Moreover, our proposed research model integrates the HR transformation model [11] with the business value of virtual worlds [31] to emphasize the alignment between HR practices, technology usage, and stakeholder values.

Finally, this study contributes to the theoretical advancement of e-HRM [6]. This study expanded the evidences of a relationship between technology and strategic HR by exploring the 3D virtual environment that is used for HR initiatives and stakeholder values. The single case study approach adopted in this research also helps to provide a good foundation for future researchers to design more empirical, field-based research to test the theories and models in v-HRM and strategic HR management [7].

5. Conclusions

McKinsey & Company suggests that virtual worlds such as Second Life will become an indispensable business tool [50]. Many companies are starting to explore opportunities for v-HRM. This research asserts that the development of v-HRM allows stakeholders to participate, observe, and interact in the HR process in a manner that may be regarded as the next step in the evolution of HR beyond HRIS and e-HRM. The case study shows that v-HRM will lead HR departments out of the ivory tower over the course of the next few years, driving HR professionals towards delivering more valuable services to companies' stakeholders and transforming HR departments into strategic assets that serve external stakeholders, customers, and investors.

The contribution of this research is multifold. First, much of the existing research on HR in virtual worlds has focused on learning [19] or recruiting [49], and has not explored the stakeholder impacts underlying these new approaches. However, our study includes a more detailed discussion of the impacts and facilitators of v-HRM that may be regarded as the next step in the evolution of HR beyond HRIS and e-HRM. Thus, this research provides a much clearer understanding of how v-HRM initiatives affect the value for different stakeholders based on the social shaping of technology approach. In addition, the proposed framework in this study can serve as a foundation to stimulate interest in future research on v-HRM. Furthermore, our study has key implications for HR transformation from inside out to outside in, thus increasing the business results. For instance, our study suggests several v-HRM initiatives that HR departments can create in virtual worlds, including corporate universities and training centers, job fairs and recruiting centers, onboarding and orientation, and team building. While these v-HRM initiatives can be conducted on a global scale without high costs and risks, they also allow stakeholders to participate, observe, and interact in the HR process in a manner that enables HR professionals becomes a proactive business driver that seeks solutions that involve and influence their external stakeholders, and thereby directly impact business results. Lastly, we propose v-HRM facilitators which play as value drivers that enhance the value impacts of v-HRM.

In anchoring the findings of this study in the larger literature, some of its limitations must be acknowledged, which could also be suggestions for directions of future research. First, there may be problems in generalizing the research findings to a wider population than the one representative in a particular study. Second, many of our findings may be specific to the IBM model in Second Life, in which the scope of v-HRM initiatives may be restricted, such as the teamwork phenomenon that was not discussed in this study. Third, stakeholders at different companies or industries may vary a lot in terms of technology literacy, preferences, and HR expectations from person to person. Also, companies are diversified in terms of technology adoption, culture, and HR practices. A heterogeneous grouping of the stakeholders with diverse companies, industries or non-profit organizations will help the understanding of effective v-HRM models. A longitudinal study involving a longer time span may

reinforce the current findings and meanwhile offer some other v-HRM initiatives or interesting discoveries. In addition, the age of the participants in our purposive sample varied only slightly: most were in their 30s, with only one individual over the age of 40, and only one individual younger than age 30. This sample may not represent the stakeholder values perceived by older or younger participants. Moreover, several security issues within virtual worlds for future research will need to be dealt with, such as data protection and integrity, unlawful activities, and information security and threats. It would be detrimental for virtual worlds if organizations and their stakeholders that have invested resources withdraw their support and reduce their participation [51].

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