Securing Intellectual Assets in a Global Environment

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Abstract

Protecting an organization’s intellectual property (IP) in the US and Western Europe is relatively straightforward because laws and enforcement mechanisms are reasonably well developed. However, other parts of the world pose significant challenges in safeguarding IP assets due to relatively weak laws and enforcement. This paper examines ways in which multinational enterprises (MNE) can secure knowledge assets across global operations. A comparative company analysis is conducted using a resource based view of the firm. The resulting best practice recommendations could be beneficial for enterprises working in global settings.

Introduction

Studies have shown that the intellectual capital in developing countries is growing tremendously. The Boston Consulting Group found that China, India, and Russia will increase the human capital for research and development by more than 2 million people by 2010. This is a sign that there will be a multitude of skilled knowledge workers in these countries ready and able to work, many for a fraction of the cost of equally skilled American workers. However, potential problems lie with the intellectual property rights protection in these countries [35]. Each of the three countries listed is a member of the World Intellectual Property Organization (WIPO). China and India are also members of the World Trade Organization (WTO) while the Russian Federation is working toward full membership in the WTO as of writing this paper. Laws in these countries are consistent with international standards and requirements. But laws are not the problem; the lack of enforcement power is [23].

This paper examines actions multinational organizations could employ to protect their intellectual assets (IA) in global business environments. A comparative company analysis considers existing literature and current practices to derive recommended best practices on knowledge security in environments that may have weak IP protection. The paper begins with a discussion of intellectual assets, knowledge audits, security, and international legislation on intellectual property rights protection. This review is followed by a description of the research method used and the presentation of the comparative analysis. A set of best practice recommendations is presented based on the results of our analysis. The paper concludes with a discussion of the recommendations, limitations of the study and suggestions for future work.

Background

The resource-based view of the firm is a theory that directly links a firm’s performance to its resources. That is a firm’s resources can lead to a competitive advantage. Resources are defined as those assets, both tangible and intangible, which are tied to the firm [28]. This paper focuses on resources that are intangible knowledge assets of an organization. Wernerfelt classifies intangible knowledge assets to include customer loyalty, production experience, and technological skills [28]. These attributes can be directly linked to specialized knowledge, which can lead to a competitive advantage [1].

Conner and Prahalad [8] offer the idea that organizations can operate in two modes. One mode is that of the firm; an entity tied together through employment contracts that do not need renegotiation. The other mode is that of market contractors, where changes require costly renegotiations. Organizational mode affects organizational knowledge in two ways. The first is the knowledge-substitution effect. This is when the knowledge of a superior is used to replace that of a subordinate either to make up for a lack of knowledge or a lack of experience. The second is the flexibility effect, which refers to the cost of altering the duties and responsibilities of the parties within a contract. In both modes the knowledge, skills, and
This paper uses a combination of the resource-based view of the firm and a contractual approach to the firm to support best practice recommendations. These views are complimentary in nature. When viewed in combination they can help to better understand the firm [14]. The focus within this paper will be that of resource monitoring, ownership, and competitive advantage in the scope of secure knowledge management.

**Intellectual Assets**

Intellectual assets (IA) include many non-tangible assets of a company. The intellectual assets of an organization are rarely recorded on a balance sheet even though they have a direct impact on the market value of the organization [9]. Such assets can be viewed as human capital, structural capital and innovation capital. Human capital is the combination of knowledge, skill, innovativeness, and ability of individual employees [4]. Structural capital the knowledge embedded into the routines and processes within an organization that contain nonhuman stores of knowledge. [19]. Innovation capital is an organization’s ability to create change. This change can come in the form of innovative products, services, or internal processes. Examples of intellectual assets include brand name, brand images, source code, even process knowledge, complex algorithms, and even employee competency.

Ulrich [26] argue IS should be treated as critical assets to an organization because:

- Intellectual assets can appreciate in value.
- The amount of knowledge work is increasing.
- The most talented employees have the most options for employment, meaning that they choose to work for their organization.
- Ignoring or depreciating intellectual assets can devalue employees.
- Many employees with a wealth of intellectual capital are underappreciated. If these employees are front-line employees this lack of appreciation can have a negative impact on the image of the organization. These employees may leave the organization taking what knowledge they have with them. They might also manipulate their work environments to get attention.
- Intellectual capital investments and programs that are incorrectly focused can convey an attitude that these investments and programs are more socially driven than business driven.

Desouza & Awazu [16] argue that IA are critical organizational assets in need of protection. To adequately secure knowledge, the organization should know the risks to their knowledge. A risk assessment is conducted based on organizational environment. A simple risk assessment includes the identification of potential risks, an assessment of each risk for probability of occurrence and severity and response policies and contingency plans to counter security breaches [16].

Before an organization can invest in securing intellectual assets, they must identify all assets and assess relative value. This is accomplished through an intellectual asset audit or knowledge audit. The audit inventories of all past and present knowledge assets held by the organization. An activity based approach focusing on the organizations critical processes to determine which knowledge assets are actually used. In considering and analyzing future plans, the audit can also be used to help determine future knowledge needs. Finally, the audit examines the alignment of knowledge use with organizational goals and examines the extent to which knowledge assets are effectively employed by organizational workers [20]. While there is no single method for auditing the knowledge within an organization, a good framework has been developed by Cheung et al. [6].

**Securing IA**

Upon completing the knowledge audit to identify assets and their relative value, organizations should set out to protect their assets. Most intellectual assets will be internal to the organization and should be protected using a proactive posture [17].

In countries with high levels of IP rights, organizations can use patents, copyrights, and other legal tools to proactively secure assets. These tools are used to assert ownership over the intellectual assets. Patents can be applied to a great deal of differing intellectual assets within an organization, including business processes and software. Applying patents to business processes is one method of keeping an organization’s competitors from blatantly copying the process. Patents on business processes also protect the embedded knowledge within the protected processes. The same is true with software. Patented software is protected from reverse engineering and illegal copying. Patents cover “anything new under the sun” except for the following exclusions: [29]

- Laws of nature
strengthening their intellectual property rights that the barrier is legitimate, to a degree. Initially there have been studies in developing a model for intellectual property rights protection in developing countries to better develop into global players. In this model, the South countries are the developing countries that need the technology and intellectual assets of the North to become a bit more difficult, as some developing countries with strong intellectual property rights and have the greater technology of the two may be mitigated further. Another key factor to carefully plan and monitor is the design of tasks and the scope of joint operations. By separating duties and partitioning tasks the outflow or leak of secure intellectual assets may be mitigated further. This method is not always the best option, based on cultural differences and contractual agreements [2].

In developing countries securing intellectual assets becomes a bit more difficult, as some developing countries view strong intellectual property rights as a barrier to entering the global market. This is what some call a North vs. South view, where the North are countries with strong intellectual property rights protection and have the greater technology of the two. The South countries are the developing countries that have weaker intellectual property rights protection and need the technology and intellectual assets of the North to better develop into global players. In this model, strengthening intellectual property rights in Southern countries is seen as keeping them from fully entering the global market, serving only to strengthen the position of Northern countries and organizations. A study in developing a model for intellectual property rights protection in developing countries has shown that the barrier is legitimate, to a degree. Initially there is a negative impact on the Southern countries when strengthening their intellectual property rights protection, but after some time the effect becomes more and more positive [5]. What this means to organizations expanding operations into developing countries is that they may not be able to rely on the intellectual property rights protection of the local governments. As discussed earlier, countries such as India, Russia, and China all have, or are working towards, developing stronger intellectual property rights, but they all lack in enforcement power. For an organization to secure their intellectual assets in these countries they need to look internally for securing their intellectual assets. One such method used in companies conducting research and development in developing countries is the use of technology that requires complimentary knowledge to fully understand and operate. This protects the technology from reverse engineering and imitation by requiring this knowledge and other resources that may not be readily available to potential imitators [35]. Another method, used by Texas Instruments software development office in Bangalore, India, is a completely modular approach to developing an entire piece of software. What is developed in this location is individually a self-contained module, but not the whole picture. When all of the modules from all the development offices of the company are combined the entire application is created. This prevents the locations in developing countries from having the whole picture of the application and protects the majority of the intellectual property from imitation. Only pieces of the applications are vulnerable to theft, imitation, and knowledge leak. These pieces may not be all that useful alone [2].

Securing knowledge when processes and data are outsourced to an organization in another country can create some very real threats. Many of the risks involved with outsourcing can be mitigated by doing in depth research into the potential outsourcing organizations. Looking at the certifications that the organization has earned is a good beginning indicator as to the integrity of the company. Certifications such as ISO 27001 show that the organization follows and documents information security controls at a high level. Before outsourcing any data or processes an organization should first conduct an audit into the proposed information and processes to send offshore. This audit includes identification of the information and processes, an analysis of access levels, verification of security controls, and a processes reassessment. One major issue that IT and security professionals should keep an eye out for is simply cloning data from a production environment to send to a development or quality testing environment without fully vetting the recipient’s processes for handling sensitive information [11].

Opening facilities in other countries opens up the organization to another threat, loss of knowledge.
through the loss of employees. This is also a threat even to offices within the home countries of the organizations. The main threat in foreign countries comes from competing organizations trying to ‘borrow knowledge’ or outright steal employees by offering better pay and other incentives. To counteract this threat, organizations need to identify the key knowledge workers and proactively work to secure their continued employment in the company. This usually comes in the form of increased incentives for remaining employed and loyal to the organization. Proactively securing the human capital of the organization helps to minimize the threat of leak and knowledge loss from competitors gaining access to the employees [7].

**Protecting IA in Global Business Environment**

Thomas Friedman describes a concept he calls the *triple convergence* in his book “The World is Flat” [15]. The idea describes the convergence of technology, people, and practices to create a global playing field with regard to business practices. The increasing ease of global communications and the growth of the Internet have created an environment that makes it much easier to conduct business on a global scale. However, multinational enterprises and global work practices have made it increasingly difficult to secure an organization’s intellectual assets. IP protection is subject to the laws and regulations of a host country. Not all countries have the same laws protecting intellectual property rights nor do they all recognize intellectual assets as property. Global treaties and organizations attempt to hold member countries to standards while promoting the protection of intellectual property. This section outlines intellectual property rights and conventions currently in place throughout the world.

**IP Rights Treaties and Conventions**

In 1994 the World Trade Organization (WTO) negotiated the creation of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). The agreement outlines requirements that the laws of member nations must meet for enforcement of IP disputes, but actual enforcement is left to individual nations [33].

The WTO implemented TRIPS to promote trade through better international intellectual property rights. The agreement is based on previous treaties such as the Paris Convention, the Berne Convention, the Rome Convention and the Treaty on Intellectual Property in Respect of Integrated Circuits [33]. TRIPS aims to “reduce distortions and impediments to international trade, and taking into account the need to promote effective and adequate protection of intellectual property rights, and to ensure that measures and procedures to enforce intellectual property rights don’t themselves become barriers to legitimate trade” [33].

The treaties and text of the agreement are specific and inclusive with regard to what constitutes intellectual property and IP protection. The weakness of TRIPS lies in its lack of enforcement power. In section 3 of the agreement the enforcement powers are given to the member nations. To be qualified to sign the agreement the nations must meet a minimum standard of documented procedures on how IP laws can be enforced. For developing countries, such as India and China, the resources to fully enforce IP protection agreements may not be available. This can result in having laws on the books, thus satisfying the TRIPS council, but lacking actual enforcement [35].

The World Intellectual Property Organization (WIPO) is a specialized agency of the United Nations (UN) tasked with the development of a balanced and accessible international IP system. Established by the WIPO Convention in 1967 WIPO has since helped enact numerous treaties on the protection of IP rights. The strategic goals [32] of WIPO include:

- Balanced evolution of the international normative framework for IP
- Provision of premier global IP services
- Facilitating the use of IP for development
- Coordination and development of global IP infrastructure
- World reference source for IP information and analysis
- International cooperation on Building Respect for IP
- Addressing IP in relation to global policy issues
- A responsive communications interface between WIPO, its member states and all stakeholders
- An efficient administrative and financial support structure to enable WIPO to deliver its programs

WIPO has a strategic agreement with the WTO and the TRIPS council. This agreement assures
cooperation on issues concerning the implementation of TRIPS, including communicating law and giving legislative assistance to member nations. Enforcement of WIPO treaties is handled by the Advisory Council on Enforcement (ACE) and public-private partnerships. Much of the enforcement is still left to member nations. WIPO offers training for law enforcement officials, case law compilations for judiciary officials, legislative advice, and public awareness campaigns to member nations [31].

**IP Law in India, China and Russia**

The three countries focused on in this paper have each implemented a range of solutions to protect IP. A full discourse is beyond the scope of this paper but a brief summary follows.

In 1999 India passed major legislation to comply with TRIPS council requirements. As a developing nation India was granted an extension of at least four years from the date of application to fully comply with legal and enforcement requirements of TRIPS. Enforcement in India is still an issue. The temptation to pirate software and other media is high due to lower economic standards. The problem lies with the lack of available resources for enforcement agencies [23]. India continues to strengthen their intellectual property rights protection to make the country an appealing choice for multinational research and development and outsourcing [35].

Intellectual property rights legislation in China is currently on par with what is required by TRIPS, as of joining the WTO in 2001. The issue is the public’s lack of understanding and respect for what western nations call intellectual property. In 1996 stores in Beijing were still openly selling counterfeit DVDs and pirated software. The majority of all personal computers in China use some form of pirated software [27]. Counterfeit goods in China are not limited to music, movies, and software. It is estimated that 10% to 20% of all consumer goods manufactured in China are counterfeits. Even the Quality Brands Protection Committee, an anti-piracy association under the auspice of the China Association of Enterprises with Foreign Investment, estimates the number of counterfeit products in the country outnumber genuine two to one [22].

The Russian Federation, like India and China, is a developing country. The difference is that Russia has not yet fully joined the WTO as a member country. Since 1993 Russia has been in negotiations with the WTO working party to establish a mutual agreement, but so far full membership has not been granted [34]. What this means for intellectual property rights protection in Russia is that they are not fully bound by TRIPs, though there is progress being made in Russia. This process is being made on the heels of pressure from the United States for Russia to have better intellectual property rights protection [3].

Currently Russia remains on the most watched list pending the improvements laid out by the agreement with the United States. Enforcement is still weak, even with an increase in raids on counterfeit disk factories. The raids amount to little with the lack of surprise and no lasting power, as many of the same factories that have been raided in recent years still operating in the same illegal capacity. The slow adoption of better IP rights protection and resistance to US pressure is because of Russia’s unique political position as a nuclear power, UN Security Council member, and as a former superpower [3].

**Research Method**

A literature review was conducted to determine a baseline of methods that organizations employ to secure their knowledge assets. Elements from the literature review were used to perform a comparative case analysis using the documented practices of four organizations. The company studies serve to outline factors to consider when securing knowledge assets in global business environments. Best practice recommendations were developed from the comparative case analyses.

Each case study analyzed in this section has some pertinent intellectual property protection and knowledge management (KM) practices described above. Company backgrounds are followed by a discussion of the practices each organization uses to protect their IP. The comparative analysis of each company study analysis leads to best practice recommendations.

Companies were chosen based on having an international presence, ideally in China, Russia, or India. If the company did not have a presence in the above countries their intellectual property protection methodology was used to determine a fit for this paper. For example Roche and Novo Nordisk were both chosen based on the management style and level of involvement around the organizations regarding their IP protection practices. Four companies were chosen based on availability of studies conducted in the area of secure knowledge management. Each company has used quite different approaches to handling many of the same practices and could be compared against one another. Once the company studies were chosen each was summarized, outlining the pertinent practices used in securing knowledge internationally. Each practice is
outlined and analyzed to identify strengths and weaknesses

F. Hoffmann-La Roche Ltd

Roche is a pharmaceutical company with a great deal of experience in protecting intellectual property internationally. Roche excels in IP protection in the decision making process. Roche has an executive committee that is handles IP related issues, from deciding on new markets expansion to patent use and procedures, to deciding how and who to partner with, every aspect of how Roche does business involves considering IP issues. Executives at Roche have come to understand that IP is the core of the business and every aspect of their products and inventions needs to be protected. The Executive IP committee relies upon their head of patents and involves other top-level managers working directly with the IP issue in the decision process. This is made possible by employee education. Managers are taught to think of IP when making any decisions. As Dr. Gottlieb Keller, member of the executive committee, stated: “If a top manager in our firm does not have at least this much basic knowledge about IPRs (Intellectual Property Rights), he cannot do his job. Fortunately, however, this is rare.” [24].

Through years of experience Roche has refined their intellectual property protection practices. Roche practices aggressive patenting of every aspect of their products and inventions, in each market they enter. This practice protects the overall invention and all of the innovations and technological advances used and created in the process of inventing the end product. This helps Roche defend against competitors reverse engineering their products and coming out with slightly different copycats or outright counterfeit products.

Such practices rely upon the enforcement power of the countries they expand into. Roche considers the IP environment of the target first. The company looks for expansion opportunities where they will be able to invent and innovate unhindered by the IP of their competitors. Roche is able to operate this way because of the corporate environment. The Executive IP cross-functional cooperation in the handling of IP. Roche has effectively aligned their IP protection operations with their core business operations.

Novo Nordisk

Novo Nordisk practices committee style IP management. The committee is made up of executives from across the organization, including the CEO, Rebien Sørensen. Mr. Sørensen is well aware of the limitations of his knowledge of the subject which helps ensure that he takes full advantage of the committee and other IP experts that are employed within the organization. He has even been known to participate in IP related training seminars, such as an internal patent course. He is there for his own benefit, to learn more on the subject to make himself a better member of the committee and a better CEO. For most IP related decisions Sørensen relies on the committee, but there are some issues where he takes direct involvement, namely any litigation that come up. Novo Nordisk uses open patent litigations as a method to help maximize mid- to long-term profits unless industry code of conduct, in which case Novo Nordisk pursues corporate licensing agreements to settle the patent infringement disputes. Even in these litigation situations Sørensen still relies on his patent managers and the IP committee to help make the correct decisions [24].

Novo Nordisk’s approach is similar to Roche, but they are lacking when it comes to a true horizontal approach. The committee at Novo Nordisk is on the right track with cross-functional involvement, but having this at only the executive level limits the effectiveness of the committee. Where Novo Nordisk excels is in the fact that the CEO will attend IP related courses to better his knowledge. This increased knowledge helps the CEO and the rest of the executive committee deal with the litigation matters. Novo Nordisk’s aggressive litigation practice shows that they continually have their ears to the ground, so to speak, when it comes to potential patent infringements. How Novo Nordisk handles patent infringements is another area where they excel, having a great deal of experience in litigation, Sørensen knows when it is best to pursue a law suit and when it is best to pursue a corporate licensing agreement.

SAP

In 2007, SAP started recruiting researchers for their research and development location in China. SAP set their sights on high-profile research talent. To attract this talent the company aimed their recruitment efforts at senior research staff from their German and US research offices. SAP also funded research projects at China’s top 10 universities to attract promising young Chinese talent. SAP was hoping to leverage their name to new graduates who were eager to work for a multinational corporation. Using their reputation as a leading provider of ERP software they were able to establish themselves as a leader in the industry in China (Kumar, 2009).
However, SAP faced many challenges to their recruitment efforts. Competitors such as Microsoft, Oracle, Sage China, and Kingdee International Software Group (Kingdee) provided stiff competition for the best talent. Many of these competitors had larger budgets to use when settling on compensation packages. SAP found that when they would offer a compensation package to a potential employee they were quickly countered by one or more competitors - often 20% to 30% more than what SAP offered. Potential Chinese employees also expected large yearly raises. Employee retention was also a challenge. Changing jobs was increasingly easy in China, especially for the type of talent that SAP Research China was in the market for. Without the budget of some of their competitors SAP China knew that they would be in for a tough time with recruiting and retaining the level of talent they wanted [21].

In retrospect, SAP should have done a better job researching the employment environment in China, before deciding upon China as a principal research location. Strong competition from the likes Microsoft and Oracle make it difficult to attract and retain top level talent. Particularly troublesome is the inability to retain employees. Having top talent walk out the door creates brain drain and the potential that past employees might reveal knowledge regarding proprietary process and practices.

**Alcatel**

Alcatel expanded into China to try to capitalize on the enormous telecommunications market. The methods that were employed were very risky. Alcatel negotiated a contract with Shanghai Bell so that there would be full disclosure of all Alcatel Intellectual Property (IP). The partnership was negotiated as a ‘50/50+1’ partnership, with Alcatel being the controlling company, renaming Shanghai Bell to Alcatel Shanghai Bell (ASB). Alcatel took a more hands off approach with ASB, only getting involved and making decisions for larger issues. Day to day operations would be handled internally by ASB managers. To help protect their IP, even with an open and sharing partnership, Alcatel had in the contract several criteria that governed the availability of the IP. With 60% of their revenues coming from IP that is 3 years old and younger, Alcatel needed to put forth some effort in maintaining that this IP would remain within the partnership. Some of the ways that Alcatel did this are that the partner, in this case ASB, must show their worth to gain access to the IP pool. Once ASB had shown their worth they were monitored to ensure that they were contributing back to the knowledge pool. This contribution agreement also considered knowledge leak. All contributions must be greater than the knowledge that is lost or leaked outside of the partnership. ASB also had to show contributions to the global Alcatel research and development efforts. All of these agreements weren’t without benefit to ASB. ASB has first rights to any Chinese patents. These patents would also be under the Shanghai Bell name, not the Alcatel name [12].

Alcatel’s strategy was quite the risk, opening up their entire pool of IP to their new partner showed a great deal of trust for their Chinese partner. This trust was not violated as ASB has become one of the leaders in the Chinese telecommunications market. ASB is leading the way in developing next generation networking (NGN), 3G, and optical networks to deliver personalized service to subscribers all over China.

The partnership agreement that Alcatel negotiated served to facilitate a strong, cooperative alliance between Shanghai Bell and Alcatel. The agreement outlined expectations, deliverables, and benefits for both organizations. Alcatel handled this partnership agreement extremely well. While the potential for a devastating failure was always a threat, Alcatel did not hesitate to open up their knowledge pool to their deserving and capable partners. By allowing Shanghai Bell to have the first rights to patent all new developments, and prioritizing the Shanghai Bell name, not the Alcatel name, Alcatel did a good job in making the partnering beneficial to both organizations. Where Alcatel really excelled in this partnership was their use of the guanxi practices, or the building of the correct relationships. Whether intentional or not, the relationship that Alcatel forged with Shanghai Bell was one that fostered trust and respect among both organizations. Alcatel was showing trust and a desire to help out both organizations, not just a one way agreement that would help Alcatel out a great deal, while not offering much to their Chinese partner. Be allowing Shanghai Bell management to retain most of the control over decision making, Alcatel was showing that they had faith and trust in the Shanghai Bell management staff. Alcatel has forged what could be a new partnership model for entering into China, showing that the risk was worth the reward in the end [12].

**Best Practice Recommendations**

This section proposes best practice recommendations for securing knowledge assets in a global environment. The recommendations are based on the cases described in the previous section along with organizational knowledge audits used to identify
key assets and processes. A summary of best practice recommendations follows:

1. Assess the best monitoring structure for your organization.
2. Stay current with education and knowing what your competitors are doing.
3. Leverage an understanding of multiple and varied cultures.
4. Assess the compensation situation in the target countries, looking to see if your organization will be able to match what is being expected.
5. Determine if using a modularized approach will be beneficial.
6. Fully research and confirm that outsourcing partners can handle sensitive information.
7. Limit and structure the use of collaboration software.

Assess the best monitoring structure for your organization

Many organizations that place a high value on their intellectual assets know that these assets need to be monitored. There are multiple approaches to monitoring an organization’s IP that have been outlined in the company analysis. The first method is a more communal approach, where there is an executive committee that is in charge of IP monitoring, but they do not make the decisions on their own. Top level managers from across the organization are involved in one way or another. This was shown to be a very effective method for Roche. This method worked because Roche has adopted a horizontal organizational structure, fostering cross-functional cooperation among all departments (Reitzig, 2007). The benefit of this method is that individual departments are prevented from making decisions based solely on self interest. The interests of the organization as a whole are constantly on the forefront of every manager’s mind.

Applying the resource-based view to this recommendation shows that the horizontally aligned organization has a high degree of flexibility. A change in a manager’s duties would not change the fact that IP-related issues would still be a primary forethought with the horizontal approach.

For vertically aligned organizations a top down approach may be best. As shown by Novo Nordisk, using the top down approach can be quite effective. The top down approach would use an executive committee as the sole source of monitoring and decision making. The CEO of Novo Nordisk understands that he is not the end decision maker in all aspects. Instead he relies upon his executive committee to make the decisions that are in the best interests of both the organization as a whole and for their departments [24]. Once benefit of this method is that with each department having an executive member on the committee, being the expert and voice of their department they ensure that the decisions and monitoring do not hinder their department and the committee as a whole ensures that they are aligned with the interests of the organization. Another benefit of this method is that organizations that all decisions, coming from the top, can carry a great deal of weight among the managers going down the hierarchy.

Stay Current

For this recommendation the management structure of the organization is still the focus. For horizontally aligned organizations all managers that are, and can be, involved with the IP monitoring and decision making process will need to be educated in the current regulatory environments, as well as be up to date with any internal practices and policies. At Roche all managers are educated from day one on putting the goals of the organization first. Every decision that is made, by any manager, relating to IP requires the managers to think about the impact to the organization’s IP stock as a whole [24]. For vertically aligned organizations, the executive committee in charge of IP monitoring and decision making should be educated on the most current IP-related issues, such as the regulatory environments they are involved with. At Novo Nordisk, even the CEO attends courses that are offered by his organization. Keeping current on education shows that the individuals involved in the decision making process, be it a horizontally aligned or vertically aligned method, are fully committed to ensuring the security of the IP they are managing [24].

Staying current is more than keeping up to date on laws and internal policies, it also means that the decision makers are keeping up with what their competitors are doing.

Staying current on what an organization’s competitors are doing can mean the difference from having their IP stolen out from under them. At Novo Nordisk, the CEO is personally involved with this aspect. He is constantly looking at the organization’s IP stock and what their competitors are doing. By keeping his ear to the ground like this he is able to stay on top of and quickly react when there is a case of patent infringement, or another form of IP theft. By quickly taking action he has been able to effectively use litigation to maintain his organization’s profitability, while also maintaining the security of their [24].
When applying a resource-based view to the recommendations of staying current on education and current with what an organization’s competitors are doing, an evolutionary frame is needed. As the organization continues to learn, change, and evolve with the environment they are building capabilities [1].

**Leverage an Understanding of Multiple and Varied Cultures**

Regardless of how an organization enters into a country, it is important to understand the culture of that country. With a good understanding of the overall business culture of a country an organization can improve the odds of making a smooth and successful entry into that country. An example is Alcatel’s entry into China. From the beginning of their partnership negotiations Alcatel showed trust and respect towards their potential partners at Shanghai Bell. By putting open access to the whole of their knowledge stock, if Shanghai Bell would prove that they added value to the company Alcatel was showing that the partnership was going to be a mutually beneficial relationship [12]. The whole agreement was based on the principle of guanxi, which is an important aspect to how the Chinese conduct business. Failing to understand and follow the culture of the target country can have some very severe negative consequences. Such was the case of SAP Research China and their struggles with hiring the desired talent. Compensation specific recommendations will be given in the next section.

Applying the resource-based view to this recommendation one can see that routines and practices in the organization must change and evolve to fit those of the host nation. Failure to do so can have potentially catastrophic effects on any expansion efforts in that country.

**Assess the Compensation Situation**

Even though a country may have been a hot spot for inexpensive labor in the past does not guarantee that it will remain that way. This is a lesson that SAP learned the hard way with their expansion into China. SAP thought they were offering generous compensation packages to their potential employees, but were quickly countered by much larger competitors. Organizations could look into the possibilities of being able to offer alternative forms of compensation. Instead of straight monetary compensation, perhaps offering stock options and other perks may be able to help entice potential employees to accept a position, and keep current employees from leaving for compensation reasons. Some areas to focus on are how employees will react to stock options, health benefits, and family services, such as an onsite day care.

To apply a resource-based view to this recommendation requires a hybrid of resource-based and contractual views of the firm to fully understand the implications of human capital and compensation. Foss argues that human capital cannot be bought, which may seem counterintuitive considering that SAP had problems with hiring talent based on not being able to offer them enough pay. This is not the case, human capital is a resource for the organization, but unlike tangible resources, it cannot be bought as easily.

**Modularized Approach**

For organizations expanding into areas with weak intellectual property rights protection, or enforcement of IP laws the use of a modular approach to research, software development, even product production can help take advantage of less expensive labor while still mitigating some of the risk to IP. Texas Instruments has been using this approach for the development of their software applications in India. This method helps to mitigate the damage if the code is stolen from the office. Each application is coded by multiple offices around the world, then reassembled and completed in the main office in the United States. Each of these satellite offices only has a small portion of the application to work on, with the true purpose of the application hidden until the final assembly phase [2].

From a resource-based view this routine has been able to overcome the competition from other firms in India, and the risk of losing large pieces of an application. This is especially the case in countries with a vast amount of available talent, but lacking in IP protection, such as India, China, and Russia [1].

**Do Research on Outsourcing Partners**

When outsourcing, do not simply clone part of the production environment to send oversees, this leads to an increase in knowledge leak. When this type of information sharing is needed, ensure that the outsourcing partner is fully prepared to handle sensitive information. Check for certifications, such as ISO 27001, to ensure that the outsourcing partner has met a certain level of requirements in the handling of sensitive information [11].

What this will do for an organization is to ensure that any sensitive knowledge that is needed by the outsourcing partner will be properly handled and secured in their offices. This research can protect an organization from making a poor choice on their outsourcing partner, which could lead to theft and loss of any intellectual assets and knowledge placed in the hands of the partner. This could lead to potentially
Conclusion

All organizations are challenged with protecting their intellectual assets. Global organizations, or multinational enterprises, are challenged with protecting these assets in multiple countries, which may or may not have adequate IP protection laws. Strong regulatory environments will have laws and enforcement mechanisms to protect IP. Conversely, weak regulatory environment may have laws, but little or no enforcement capabilities. The type of industry plays a role in securing IP due to the differing IP in each industry. A research and development firm will have very different IP than an industrial firm, or even a software firm. Taking a proactive security posture can help establish policies and procedures that protect IP before it has been violated in some manner. Conversely, a reactive posturing would wait for an incident to arise before acting on it. Finally the management structure of an organization can lend to different methods for securing IP. A vertically aligned organization will have much different needs and policies than a horizontally aligned organization.

As illustrated in the cases presented in this manuscript, organization cannot and should not rely on regulatory environments to protect intellectual property in global business environments. In China, Russia, and India enforcement of intellectual property laws remains one of the largest hurdles for an organization to overcome. By researching available literature on knowledge management and secure knowledge management and also by conducting a comparative company analysis, recommendations on how an organization can overcome IP protection hurdles have been made. Following the recommendations in this paper can help an organization establish strong internal procedures and controls that will help secure their intellectual assets.

This paper is not an all inclusive study on secure knowledge management in India, Russia, and China. There was great difficulty in finding company studies directly relating to secure KM in these countries, some of the studies were very general, simply giving a brief overview of the practices being used to secure IP. Further study is needed to fully create recommendations on how to secure an organization’s knowledge in the three previously listed countries. The research for this paper was limited by time and available company studies.

The field of secure knowledge management is wide open for new research. The difficulty in finding company studies for this paper has shown that organizations are not forthcoming with their processes or that there has not been a great deal of research into this area. For further research the recommendations could be taken a step further, identify organizations using one or more of them and conduct a company study on the effectiveness of their IA security.

References


