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A RFID Based Ubiquitous-Oriented 3rd Party Logistics System: Towards a Blue Ocean Market

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1. Introduction

Companies have been competing based on how to gain the largest share of the market space, which causes intense competition with industry-wide over-supply, and even profit decrease in the case of shrinking market space. Blue Ocean strategy provides companies with guidelines on how to escape from intense competition over the same market space where there are limited customers with an increasing number of competitors by creating a new market space where there is less competition, if any (Kim & Mauborgne, 2005).

Systematic and efficient logistics service has become one of the core support services of e-businesses, and many innovative strategies utilizing globally expanding Internet technology and e-businesses have been proposed such as new business models with less distribution layers resulting in customer-based logistics, Internet-based logistics, logistics for small-batch production, zero-inventory logistics, and 3rd party logistics (3PL)' reverse logistics model and GRID services based marketplace model (Bhise et al., 2000; Bruckner & Kiss, 2004; Krumwiede & Sheu, 2002; Lee & Whang, 2001; Lee & Lau, 1999; Simchi-Levi et al., 2004). As a relatively new business model in logistics, 3PL companies provide outsourcing service of transportation, warehousing, freight consolidation, distribution, inventory management, and logistics information systems to companies who used to operate their own logistics network (Kimura, 1998; Rabinovich et al., 1999; Sink & Langley, 1997; Vaidyanathan, 2005).

CJ-Global Logistics Service (CJ-GLS) is a late comer in intensively competitive Korean logistics industry. Entered into the 3PL industry from the start, however, it has the largest client bases and ranked fourth in the market due to its strength in market analysis, customer requirement analysis, and constructing logistics information systems (LIS) including successful implementation of radio frequency identification (RFID)-based ubiquitous LIS. This chapter analyzes CJ-GLS' business model with Blue Ocean strategy to show how a company in the Red Ocean reinforces its competitive advantage to move toward a less competitive new market space by utilizing information technologies. For this case study, we

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interviewed the CEO, CIO, CJ-GLS logistics strategy research manager, the team manager of the information strategy team, and several line workers both, in July and September 2005.
The structure of this paper is as follows. In the following section, we describe the case company CJ-GLS, including an explanation of the information systems and its evolving path to e-business and m-business supporting LIS. In section three, CJ-GLS' ubiquitous-oriented 3PL LIS with its fundamental RFID technology is explained. Furthermore, we project the forthcoming new business model based on the ubiquitous-oriented 3PL LIS. In the fourth section, we introduce the framework of analysis, Blue Ocean strategy, and analyze the case using this framework. Problems and success factors found throughout the implementation of the ubiquitous oriented 3PL LIS are stated. Finally, we summarize the CJ-GLS' strategic path and its capabilities in creating an uncontested Blue Ocean with its superb business processes and supporting technological capabilities.

2. The first mover: CJ-GLS

2.1 Introduction to CJ-GLS

Starting its business as a subsidiary of Samsung Corporation in 1988, CJ-GLS adopted a cross-docking system in South Korea for the first time in its industry in 1991, built LIS in 1994, and introduced coastal shipping logistics in 1996. In 1998, the logistics systems and technology subsidiary unit of Samsung Corp. renamed itself CJ-GLS and launched its separation with an initial public offering of stock issued in 1998.
The core business units of CJ-GLS are 3PL service and domestic and international small parcel services that are all based on corporate clients. 3PL service and the largest portion of its business executes the logistics support for client companies and includes freight consolidation, distribution, transportation, warehousing, product marking, labeling, packing, order management, etc.
Clients of CJ-GLS are twofold: the first group are companies who have their own logistic systems but utilize CJ-GLS' superb 3PL and international small parcel service capabilities, and the second group are startups without their own logistics systems and who utilize 3PL service for B2B logistics service and small parcel services for B2C logistics. Clients are composed of 220 companies from a variety of industries, including pharmaceutical, food, chemical, and e-marketplaces. Some of the international clients of CJ-GLS include Sony, National Panasonic, Lego, Nestle, and Osram Sylvania. Table 1 shows the growth of CJGLS' revenue. It increased from $64 million in 1998, to $751 million in 2008, which placed CJ-GLS in the top rank in 3PL service and third rank in Korean logistics industry. Fig. 1 and Table 2 shows the logistics market of Korea.

Service	1998	2004	2008	2009*
3PL	64	197	438	345
Parcel Delivery Service	-	139	212	295
Intenational Delivery Service	-	43	101	410
Total	64	379	751	1,050

*: Estimate

Table 1. Sales revenue of CJ-GLS (Unit: $ million)

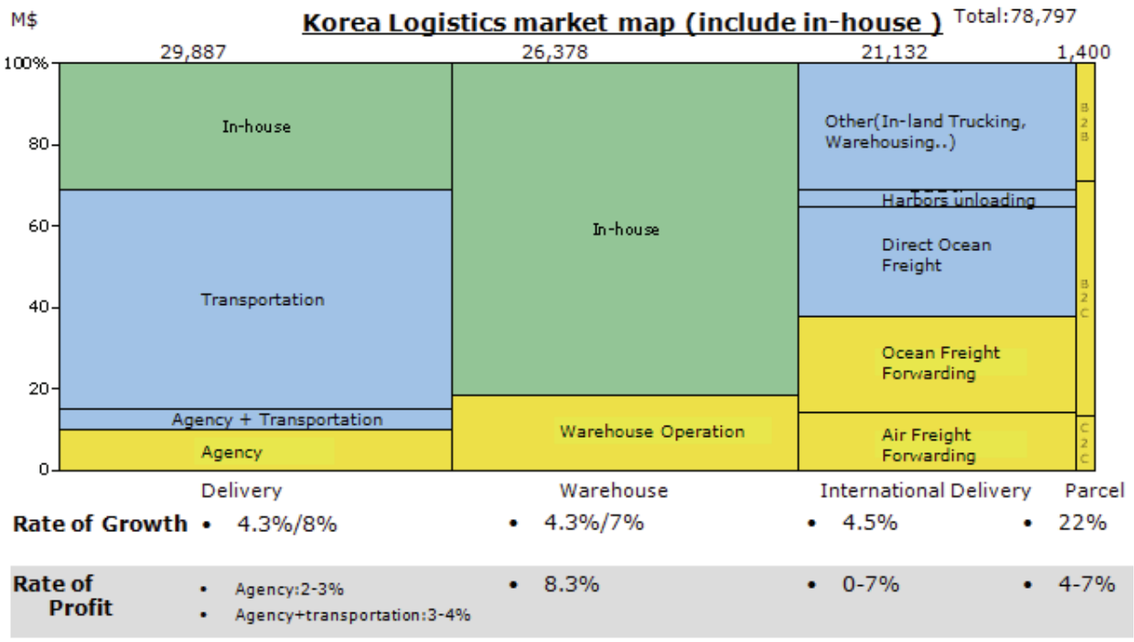

Fig. 1. Korean logistics market map

Company	Sales ($Mil)	Growth Rate (%)	Investment ($Mil)
DaeHan Tongwoon	1,266	8	80
Hanjin Haewoon	6,936	13	441
CJ-GLS	751	28	30
Hanjin	748	-2	60
Hyundai Taekbae	664	15	61
Hansol CSN	295	9	24
KCTC	173	15	15

Table 2. Sales revenue of the major Korean logistics service providers in 2008

2.2 Logistics information systems of CJ-GLS

Logistics information systems (LIS) in CJ-GLS have evolved from fundamental LIS, to e-business supporting LIS, and to the ubiquitous computing-oriented LIS. To avoid other incumbents' mistakes of adopting foreign solutions which failed to be customized to South Korea, CJ-GLS followed an in-house development approach through its sister company, CJ Systems. In-house development reduced the erroneous design causing conflicts between the actual business processes and the information flow.

Fundamental Logistics Information Systems: OMS, TPS, and WMS - From its early stage of market entrance, CJ-GLS concentrated on building business operation systems targeting to 3PL processes, composed of Order Management Systems (OMS), Warehouse Management Systems (WMS), and Transportation Management Systems (TMS). OMS is constructed based on the business process regarding order receipt, order tracking, performance analysis, and generating ad hoc reports. WMS is inventory management through tracking the movements,

the storing of materials within a warehouse, sharing accurate inventory information with the clients, and directing the movement of goods based on urgency for space, equipment, inventory, and personnel. TMS is connected to and shares information with WMS and OMS for accurate delivery of ordered materials.

E-Business Supporting Logistics Information Systems - Upon these fundamental LIS, CJ-GLS implemented new e-business support features. The storefront is a web-based user interface for clients and other IS users to access the system through the Internet. Delivery routing systems powered by artificial intelligence were added to TMS for safe and on-time delivery. OMS is connected to finance and accounting modules of SAP's enterprise resource planning systems. Data generated from WMS and TMS are analyzed with a data mining technology and applied to customer relationship management (CRM) systems for managing uncertainties such as preorder forecasts and delivery routing adjustments.

CJ-GLS added mobility to its e-business-based LIS, specifically to TMS. Core strategy of TMS mobilization is threefold: 1) to enable clients and CJ-GLS to track the shipments in and out of warehouses or distribution centers 2) to enable clients and CJ-GLS to predict the accurate arrival time of the shipments and 3) to reflect the arrival information of delivery scheduling in order to increase the efficiency of the system. TMS provides schedules locally and nationwide, and it sends the scheduling information to the carriers' PDA. Carriers download the shipping schedules from TMS, and the shipping status is administered back into TMS through a Global Positioning System (GPS). This mobile technology-based logistics management enables not only clients to access shipping status and scheduling information through the storefront using their web browsers, but also the provider to manage issues in shipping.

3. Toward deep blue ocean: ubiquitous-oriented 3PL system

Although e-business support and mobilization of OMS and TMS improved the efficiency of order-and freight-related business processes, productivity gains of the entire 3PL business process (Fig.2) is not maximized because of inefficiency of the bar code-based WMS business processes where reading errors cause inaccurate information and extra operating time and operating cost. To improve the warehouse business process and maximize efficiency and synergy from the integration of three LIS subsystems, RFID based WMS was developed.

As Carr (2003) argued, ICT-driven competitive advantage is not sustainable unless the ICT strengthens the existing competitive advantage. The companies such as Hanjin and Hyundai, who entered into the 3PL market in 2000, also integrated their 3PL system with the clients' and their IS (e.g., Hanjin's e-HaNex and Hyundai's HiTexII). The strategy CJ-GLS is presently using to gain a competitive advantage over incumbents in the industry involves developing and applying a new ICT-driven LIS. This innovative approach is always accompanied by a great risk of failure, and if one of two aspects is not successful, whether it is the ICT or the application, it would result in a disastrous outcome for CJ-GLS.

To continue along a strategic path, there was a pressing demand for an ubiquitous-oriented 3PL system and new technological innovation. The core technology necessary to accomplish promoting the strategy for an ubiquitous computing 3PL system is RFID technology, which remotely recognizes large volumes of inventory and manages inventory information. A collaborative business model was developed to harmonize and coordinate all the business processes. The RFID-based ubiquitous 3PL system was promoted to apply a collaborative business model into the field operation of warehouses and distribution centers.

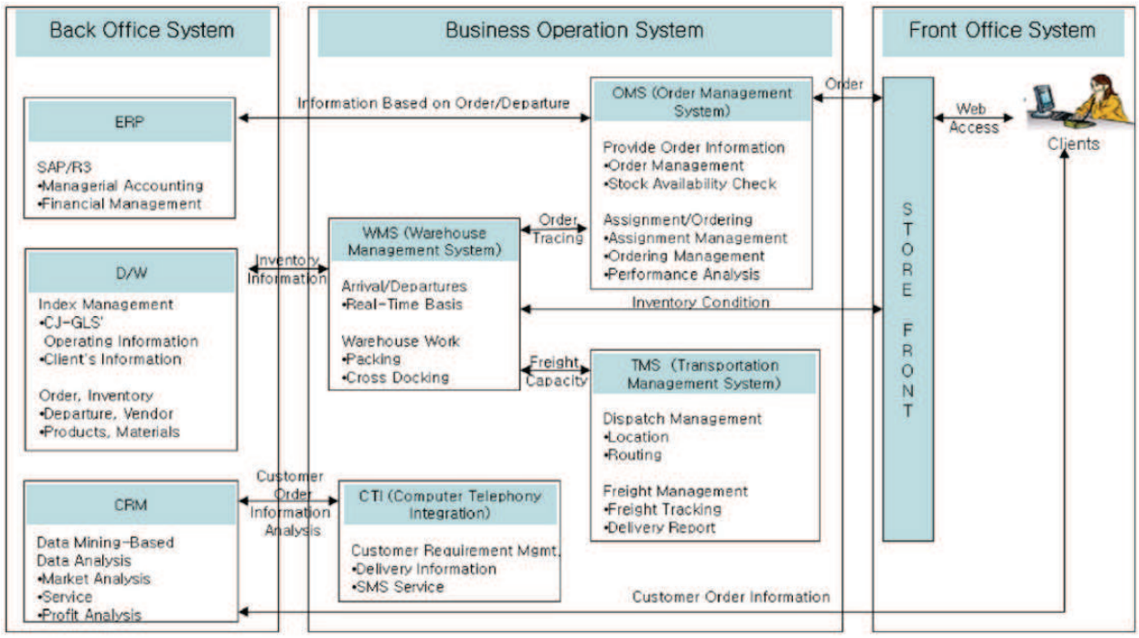

Fig. 2. Information flow in 3PL LIS of CJ-GLS

3.1 RFID technology

RFID uses radio frequency to transmit stored information to a remote reader. Information about the material from the beginning of its production up to its distribution is stored in a RFID tag that is traceable through certain wireless frequency. Its advantage over the bar code is noncontact based. In the bar code system, operators need to scan every single bar code with bar code readers in order to recover such information. The RFID system enables operators to retrieve the information on inventory at once regardless of its quantity. The storage capacity of RFID tags is about 6,000 times larger than that of bar codes, which enables us to assign different IDs to the same product and other variable information. While the bar code can only be read, the RFID allows rewriting updated information over previously recorded information. These advances make RFID the next exciting innovation in logistics industry.

3.2 RFID and WMS

In CJ-GLS, the starting point has been the replacement of the bar code system in warehouses and distribution centers with RFID tags. The information flow in warehouse is composed of seven business processes.

Receiving Inspection – materials are inspected before they get unloaded, and each bar code is scanned in order to be matched with the information in WMS.

Stocking - unloaded materials are placed into storage space designated by WMS.

In-Storage Handling – material information, such as volume, weight, and storage requirements, is handled, and each time transfer occurs, the scanned bar code information should be transferred to WMS.

Selection – bar codes of ordered materials are received from WMS and matched by scanning each material.

Picking – selected materials are staged for shipping.
Shipping Inspection – materials are inspected before they get loaded, and each bar code is scanned to be matched with information in WMS.
Shipping – loaded equipment departs to the next destination when all requirements are met.
For each of these seven processes as shown in Fig. 3, warehouse operators are required to scan bar codes of the materials continuously to check the inventory, both previous and additional, and to calculate what is missing. This frequent bar code reading causes many problems from scanning omissions resulting in an inaccurate inventory and unclear boundary of liability between processes. These problems cause delays in all the business processes of LIS, including OMS and TMS.

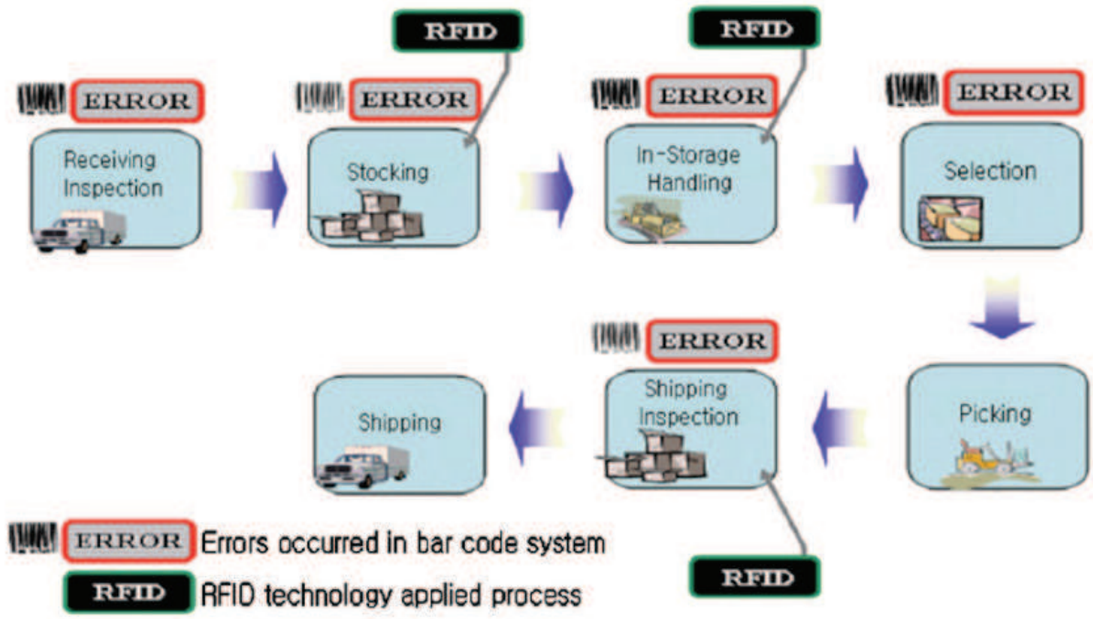

Fig. 3. Business processes in WMS prior to RFID implementation

RFID-based WMS reduced the seven-step warehouse processes into four steps (Fig. 4). It enabled managing inventories on real-time basis tracking, as well as updating inventory information, which resulted in accurate inventory information. Along with WMS, accurate information minimized the additional costs from returned materials. Overall, management innovation, work time reduction, optimized inventory, zero errors, and labor cost reduction were achieved.

Fig. 4. Business processes in WMS after RFID implementation

The RFID-based WMS increased the accuracy of inventory management and cut down the work time to one-third of the previous system. For example, receiving inspection time has

been reduced from 10 to 3 seconds, shipping inspection time has been reduced from 600 to 3 seconds, and in-storage handling time has been reduced from 10 to 3 seconds. As the amount of materials increase, inspection time in the bar code-based WMS increased in multiples of the amount not including the added time due to errors and omissions. However, the inspection time in the RFID-based WMS was not influenced by the changes in the amount ordered and was free from added time caused by errors and omissions. These effects become clearer as the amount of inventory increases. Qualitative benefits include the transcendental operation of value-added service from the connection of existing information systems and RFID-based ICT innovation and its application into the collaborative business model, systematic knowledge acquisition through collaboration and knowledge-sharing among participants (universities and research institutions), and guiding experience through the first application of RFID in logistics operations in South Korea. Fig. 5 shows the details of the benefits CJ-GLS acquired from RFID-based WMS.

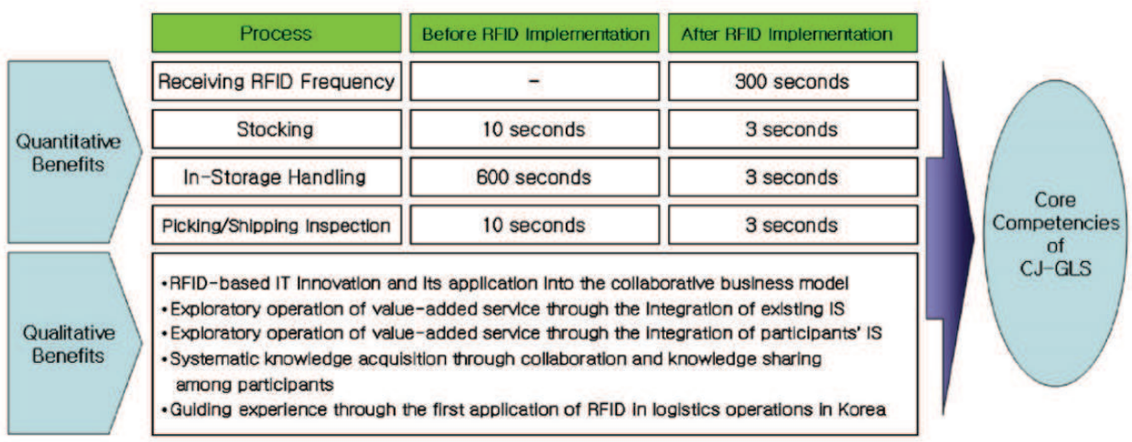

Fig. 5. Benefit of RFID-based WMS

3.3 New business model

CJ-GLS' strategic movement includes the improvement of its internal IS with RFID technology, which strengthens its competitive position in the existing market (Red Ocean) and in the development of the new market called RFID-based electronic logistics business. CJ-GLS plans to develop an application service provider (ASP)-based, new business model through utilizing its connection between the manufacturing industry and distribution industry.

Current major distribution companies like Wal-Mart, Tesco, and Costco require major manufacturers to attach RFID tags on the products they want to distribute through these distribution companies. Major manufacturers may be capable of doing this. However, small and medium enterprises (SMEs) may face technological difficulties and a considerable cost increase for doing this. In the evolving electronic logistics service market, CJ-GLS will provide solutions covering the entire logistics service from tag installation, to ONS registration of the clients' products, to product history management, eventually becoming a 4th party logistics (4PL) service provider. 4PL increases the SMEs' opportunity for marketing their products to major distribution companies, provides efficiency in the logistics process,

and allows them to concentrate on their core competencies. An ubiquitous electronic logistics business model will allows CJ-GLS to create an uncontested new market space where new demand and high growth is possible.

4. Analysis of case

4.1 Framework of analysis: blue ocean strategy

There are two opposing market space concepts: Red Ocean, which is the current existing industry, where boundaries and competitive rules are well known to competitors who try to achieve a greater share of existing demand and Blue Ocean, which is any new industry where "demand is created rather than fought over" (Kim & Mauborgne, 2004). Blue Ocean strategy is the strategy which can avoid severe competition by creating an uncontested market space. Two approaches for creating Blue Ocean have been proposed. The first approach is to create completely new industries (e.g., online auction service in auction industry). The other approach is to create a new niche market within the existing industry by altering the existing competitive rules (e.g., ubiquitous-oriented 3PL in logistics industry). Kim and Mauborgne (2004) suggested the Four Actions Framework, which provides guidelines to create a new strategy profile and which defines the characteristics of Blue Ocean strategy. Using this framework, we have identified CJ-GLS' electronic logistics business model as a case of Blue Ocean strategy.

4.2 Four actions framework for CJ-GLS's RFID service

The ubiquitous electronic logistics business model of CJ-GLS is analyzed based on the Four Actions Framework of "Eliminate," "Reduce," "Raise," and "Create" (ERRC) proposed by Kim & Mauborgne (2005). The results are summarized in Table 3.

Eliminate	**Raise**
– Errors caused by manual handling of warehousing activities – Errors in recognizing bar codes resulting from repetitive work – Work delays involving deliveries to or collections from warehouses	– Automated handling rates of logistics activities – Information service optimized for the company's activities – Speed of process
Reduce	**Create**
– Labor costs and fixed costs for warehouse management – Inefficient work activities – Steps and errors	– Blue Ocean market of electronic logistics business – New cyber distribution/logistics – New customer satisfaction and loyalty

Table 3. ERRC chart of CJ-GLS

First, the introduction of RFID-based electronic logistics business has resulted in the "elimination" of certain elements that had been taken for granted in the industry, such as the occurrence of errors caused by manual handling of warehousing activities, errors in recognizing bar codes resulting from repetitive work, and work delays involving deliveries to or collections from warehouses. Secondly, the concerning elements that should be reduced below standards of the industry (namely, labor costs for warehouse management and fixed costs) have been reduced thanks to automation and optimized work handling, respectively. Such "elimination" and "reduction" of inefficient work activities have been effective in sharply cutting both time and costs. The third aspect concerns elements that have been "raised" higher than industry standards compared to rival companies, and they include increases in automated handling rates of logistics activities and in information service optimized for the company's activities. More specifically, large volumes of loaded cargo are recognized in warehouses within a short time, and information on cargo taken in or out of warehouses is delivered to the operation system in real time, thus enhancing efficiency in the entire logistics business and improving information service. Finally, disproving the existing generally accepted notion that logistics companies only provide logistics-related services, CJ-GLS has successfully realized an ubiquitous-oriented Third Logistics System based on RFID, which has yet to be offered by other companies, thereby "creating" a Blue Ocean market of electronic logistics business that is a new cyber distribution/logistics area where competition does not exist. Hence, CJ-GLS created new customer satisfaction and loyalty by achieving accurate prediction and information on shipments due to the location information of carriers on a real-time basis, which optimized delivery schedule and dispatch.

In summary, as can be seen from Table 3, we apply the Four Actions Framework to analyze the CJ-GLS ubiquitous oriented-electronic logistics model. CJ-GLS creates the Blue Ocean in terms of an electronic logistics business model, which is within their core businesses. CJ-GLS focuses on noncustomers, uncontested market space, and new demand for the electronic logistics business. The case analysis of CJ-GLS provides analytic frameworks and useful insights for capturing the Blue Ocean opportunity.

4.3 Comparison with red ocean strategy

In this section, CJ-GLS' strategy is compared to that of the competitor's in view of Blue Ocean strategy.

Market Space - Other logistics service providers tried to compete in existing market space, Red Ocean, but CJ-GLS explored uncontested market space using the RFID tag agency service. The new, uncontested market space which CJ-GLS' new business model will create expands from the existing 3PL industry, with new RFID-enabled services. In addition to the fulfillment of existing 3PL service, these services include the assignment of unique ECP codes to physical RFID tags and the attachment of them to the manufacturers' products.

Competition - Other Korean logistics service providers tried to attract more market share from the existing competition based on accurate and timely delivery of products at the lowest freight cost. CJ-GLS made the competition irrelevant. While the incumbents have deployed more physical distributions, with the new RFID outsourcing service, CJ-GLS adds more value to the clients, along with providing more advanced service in the physical delivery of the product. This additional value to the clients makes the competition based on physical delivery irrelevant.

Demand - Red Ocean strategy exploits existing demand, while Blue Ocean strategy creates and captures new demand. Other competitors try to raise demand in the current existing market, but CJ-GLS creates new demand using RFID. Even though RFID was new technology that other companies had not tried, CJ-GLS took a risk creating a new market.

Value-Cost Trade-Off - Red Ocean strategy emphasizes the current model of trade-off between value and cost, while Blue Ocean strategy looks at value and cost in a new way. Incumbents try to add value by increasing the additional cost of physical resources, such as storage and trucks. But Blue Ocean strategy tries to remove human errors. Removing human errors in inventory management using WMS, as well as OMS and TMS, brings additional value to clients, in stead of incurring the additional cost of physical resources.

Alignment of the System - Red Ocean strategy aligns the whole system of a firm's activities with its strategic choice of differentiation and low cost, while Blue Ocean strategy aligns the whole system of a firm's activities in pursuit of differentiation and low cost. CJ-GLS' RFID service, in addition to the current 3PL service, will bring exclusive values to clients. To achieve this, CJ-GLS analyzed and redesigned its internal business process and educated its employees. Integrating the two services will bring synergy to clients, such as convenience from one-stop service and efficiency from concentrating on clients' core business.

4.4 Findings: problems and success factors

During implementation of the new technologies into existing IS and business processes, several organizational and technological problems are bound to occur. To solve such problems, CJ-GLS involved all levels of its employees in searching out solutions and effective alternatives. After surveying possible solutions and/or alternatives, the information strategy team conducted several strategic seminars to establish an efficient development direction to solve problems. In this section, we list the bottlenecks and success factors that we faced in building the Blue Ocean strategy.

Bottlenecks - Bottlenecks, whether they are social-oriented or technology-oriented, are common when new technology is introduced into an existing business process and organizational structure.

a. *From the Organizational Perspective* - CJ-GLS experienced two problems from the mobilization of TMS. The carrier's equipment operators complained about the delivery schedule downloaded to their PDAs from TMS, considering it an invasion of privacy. The operators also argued that the impracticality of the schedule created from freight information, distance between customers, and the expected delivery time is a result of the lack of actual work experience. The vehicle location tracking system, enabled by GPS or GIS, which provides real-time tracking for clients, was also considered to infringe on the operators' privacy.

   Another difficulty arouse when the RFID technology was implemented to WMS. Warehouse operators felt that RFID would eventually replace their jobs. This was the source of their uncooperative attitudes. For the scheduling problem, CJ-GLS upgraded their routing engine to include additional fixed and variable unloading time. GPS and GIS replaced the geolocation service to improve the accuracy of vehicle locations. Continuous education and learning resolved the issues of privacy invasion and the possibility of jobs lost from adopting the technology. Workers were assured that the new system was implemented to increase customer value and accurate delivery, and was for the common benefit of all.

b. *From the Technical Perspective* - The biggest concern at CJ-GLS was having no prior experience in RFID technology and the fact that there were no practical cases of its successful application. The absence of a technology standard, a successful application case, and a shortage of insight on the forthcoming business process changes were the main shortfalls. All of these implied a high possibility of failure when using a RFID-based 3PL system.

The major technical problems of RFID utilization in a warehouse setting are multiple readings and omission errors. As freight with RFID tags is being processed at one of the steps of the warehouse operation, the designated RFID antenna for the step should automatically receive the information of the freight being processed and this information should be transferred to WMS to show where and at which step of the operation the freights are. However, multiple receiving by non-designated antennas or antennas designated for other steps of warehouse operation misleads WMS to recognize the freight to be at multiple steps at the same time. Multiple receiving occurs due to the interference of noise and obstacles in the warehouse and multidirectional frequencies sent by RFID tags.

Multiple receiving errors were corrected by reprogramming the middleware that processes information received by RFID antennas. The middleware allowed WMS to recognize information sent by the RFID antenna designated for the second step only when the information from the antenna designated for the first step had been entered and so forth with the rest of the steps.

Another technical bottleneck occurs when the RFID antenna fails to receive freight information sent by RFID tags. Such failures are caused when the frequencies from the RFID tags are weakened or blocked by the stocking of freight or metallic packaging materials. After several discussions and benchmarking of other similar cases, CJ-GLS installed a conveyor belt system, with RFID antennas attached directly above the belt. Freight is placed on the belt individually and transported into the warehouse after being removed from their pallets and packaging materials, which block RFID frequencies. This business process reengineering enabled the RFID antennas to receive the information sent by RFID tags without any failures.

Success Factors - The success factors of CJ-GLS' ubiquitous-oriented RFID 3PL system showed how the company supports complementary assets (Brynjolfsson & Hitt, 2000; Marchand, 2004; Teece, 2009), such as cultivating the organizational learning culture and managerial advancement, in addition to new technological innovations to achieve a competitive advantage against leading competitors.

a. *Adventure to the Blue Ocean: Highly Motivated Information Strategy Team Culture* - CJ-GLS realized IS as one of its core competencies early on. They developed and operated their core IS in-house, mobilized TPS, and recognized that the potential impact of ubiquitous technology and an information strategy team is the center for developing a successful IS. Highly motivated team members and a progressive culture within the information strategic team is the driving force. Following is the quote from CIO of CJ-GLS "*We all agreed that RFID technology would be a solution to many logistics problems. However, we could not find a single successful case of RFID application in the logistics industry, and the RFID system vendors were not able to provide any useful application insights. We found that Wal-Mart and Tesco, just like us, are in the process of applying RFID technology to their logistics system and testing it. Instead of searching for and adopting prior applications, we (the*

information strategy team at CJ-GLS) chose to develop an RFID logistics system of our own with collaboration from outsourced research institutions. All team members of CJ-GLS and the researchers searched, shared, and learned RFID references, which later turned into a learning and proactive culture. Even though we have no experience in this field, we are highly motivated to move in a new direction. The team members' attitude and CJ-GLS' culture is the driving force for individual and organizational growth."

b. *Advantages of the First Mover and Top Management Leadership* - In a global e-business environment, leadership is the driving force behind the revolution of the entire organization. While accomplishing the RFID-based, ubiquitous-oriented 3PL system project, top management at CJ-GLS manages participants consistently to prevent them from losing focus with the objectives of the project, which is highly possible when multiple participants are involved. Following is the quote from strategy research manager of CJ-GLS "*This RFID project was our first large scale consortium. Therefore, we have less experience in collaborating with outside participants. Since all participants have their own interests in regards to the project, it was not an easy job to reconcile them to focus on the objectives. Our top management played an important role as a neutral consultant for moving the project in the right direction.*"

c. *Open Mindset for New ICT* - CJ-GLS was aware of the importance of the RFID-based, ubiquitous-oriented 3PL system and started research on technology by establishing a RFID center. The research initiative is located in the same physical space occupied by the information strategy team for easy communication among researchers and employees. Following is the quote from the interview with CIO of CJ-GLS "*Our core competencies are not from the number of vehicles or warehouses but from a Korean-style, 3PL system development capability, top management's open mind to new technological innovations, and the system development capabilities of our human resources.*"

5. Conclusion

This case shows how a 3PL provider develops an ubiquitous, electronic logistics business model which pioneers into an uncontested market by not only defining customers from an existing logistics market but also by recognizing future customers.

Unlike numerous companies that have tried to mingle foreign solutions into their IS and business processes, CJ-GLS developed their own systems, managed the organizational changes, and utilized ICT's impact toward strengthening its 3PL business model. CJ-GLS evolved from e-business supporting LIS to m-business supporting ubiquitous-oriented LIS, which achieved efficiency in OMS and TPS. Whenever they faced bottlenecks and problems, they overcome those problems through organizational and technological change. When inefficiencies occurred from the existing business process, new technology was deployed. Once a new business process is enabled by technology, employees are educated and organizational changes follow.

CJ-GLS has built its competitive advantage through expanding capabilities, such as human resources and new technology innovations, rather than an expansion of tangible assets, such as warehouses and freight fleets, and has focused on its core competency, as well as strengthening its competitive advantage through utilizing technological innovation.

Because expansion of global e-business has brought about infinite global competition, companies must devote themselves to finding a new growth engine. Under these

circumstances, Blue Ocean strategy provides a guideline for how companies can survive by creating new uncontested market space instead of competing in the existing market.

6. References

Bhise, H. ; Farrell, D. ; Miller, H.; Vanier, A. & Zainulbhai, A. (2000). The duel for the doorstep. *The McKinsey Quarterly*, Vol.2, 33-41, 0047-5394.

Bruckner, L.K. & Kiss, T. (2004). Grid solution for e-marketplaces integrated with logistics, *Proc. of the DAPSYS 2004 Conference*,pp. 155-163, 0387230947, September, 2004, Budapest, Hungary.

Brynjolfsson, E. & Hitt, L.M. (2000). Beyond computation: information technology, organizational transformation, and business performance. *Journal of Economic Perspectives*, Vol.14, No.4., 23-48, 0895-3309.

Carr, N. (2003). IT doesn't matter, *Harvard Business Review*, Vol.81, No.5, 41-49, 00178012. Kim, W.C. & Mauborgne, R. (2005) Blue ocean strategy: from theory to practice. *California Management Review*, Vol. 47, No.3, 105-121,0008-1256.

Kim, W.C. & Mauborgne, R. (2004) *Blue ocean strategy: how to create uncontested market space and make competition irrelevant*, Harvard Business School Press, 1591396190, Boston, MA.

Kimura, T. (1998) The emergence of third party logistics, Vol. 120. Tokyo, Japan: NLI Research Institute.

Krumwiede, D.W. & Sheu, C. (2002). A model for reverse logistics entry by third party provides. *Omega*, Vol. 30, No.5, 325-333, 0305-0483.

Lee, H.L. & Whang, S. (2001). Winning the last mile of e-commerce. *MIT Sloan Management Review*, Vol.42, No.4, 54-63, 1532-9194.

Lee, W.B. & Lau, H.C.W. (1999). Factory on demand: the shaping of an agile production network, International. *International Journal of Agile Management Systems*, Vol.1, No.2, 83-87, 1465-4652.

Marchand, D.A. (2004). Extracting the business value of IT: it is usage, not just deployment that counts. *Capco Institute Journal of Financial Transformation*, Vol.11, 125-131.

Rabinovich, E.; Windle, R.; Dresner, M. & Corci, T. (1999). Outsourcing of integrated logistics functions. *International Journal of Physical Distribution and Logistics Management*, Vol.29, No.6, 353–373, 0960-0035.

Simchi-Levi, D.; Bramel, J. & Chen, X. (2004). *The logic of logistics: theory, algorithms, and applications for logistics and supply chain management*, Springer, 0387949216, New York.

Sink, H.L. & Langley, C.J. (1997). A managerial framework for the acquisition of third-party logistics services. *Journal of Business Logistics*, Vol.19, No.1, 121–136, 07353766.

Sjöstedt, L.M. (2002). Managing sustainable mobility: a conceptual framework. In: *Information systems in logistics and transportation*, Tilanus B, (Ed.), 19-31, Elsevier, 0080430546, Kidlington, Oxfordshire.

Teece, D. (2009). *Economic Dynamic Capabilities and Strategic Management: Organizing for Innovation and Growth*, Oxford University Press, 019954512X , USA.

Vaidyanathan, G. (2005) A framework for evaluating third-party logistics. *Communications of the ACM,* Vol.48, No.1, 89-94, 0001-0782.

Sustainable Radio Frequency Identification Solutions

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Radio frequency identification (RFID) is a fascinating, fast developing and multidisciplinary domain with emerging technologies and applications. It is characterized by a variety of research topics, analytical methods, models, protocols, design principles and processing software. With a relatively large range of applications, RFID enjoys extensive investor confidence and is poised for growth. A number of RFID applications proposed or already used in technical and scientific fields are described in this book. Sustainable Radio Frequency Identification Solutions comprises 19 chapters written by RFID experts from all over the world. In investigating RFID solutions experts reveal some of the real-life issues and challenges in implementing RFID.

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