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(Overcoming the Liability of Renewal at the Saudi Railway Sector)

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Abstract

Organizational change has remained an important subject for many researchers in the field of organization theory. We propose the importance of organizational liability of renewal¹ through a model that examines how an organization within the Saudi Arabian railway sector can overcome potential rigidities in organizational capabilities from learning by changing those capabilities. We examine whether organizations within the railway sector can overcome the liability of renewal by changes in organizational capabilities.

We develop a model of organizational renewal utilizing researches from various management schools of thought, such as Institutional Economics, Population Ecology, and Organizational Learning. Our model relates how changes in legitimacy and performance affect pressure for change on an organization. Further, our model relates how the organizational renewal process reflects on the balance between the dynamic aspect of organizational learning as demonstrated by changes in capabilities and the stabilizing aspects of organizational inertia.

In this study we are examining two organizations within the Saudi Arabian railway sector. We analyze the Saudi Railway Organization (SRO) in terms of its freight and passenger operation from 2001-

¹ The liability of renewal, in our case, can be defined as whenever an old established organization tries to minimize errors to re-gain legitimacy throughout a process of organizational learning from changes in capabilities which aims to improve its performance. During the renewal process the organization risk of failure in implementing new routines increases. This increased risk of failure, we refer to as the liability of renewal.

2014 and also the freight operation at the Saudi Railway Company (SAR) from 2011-2014. We also expect that the new entrant SAR creates an environmental (institutional) turbulence or change that has an impact on the existing organization SRO. So we examine SRO before and after SAR's entrance into the Saudi Arabian railway sector. We found support for our model in that most of our results were in the hypothesized direction. We found that learning from changes in organizational capability has a positive effect on performance. Also legitimacy has a positive effect on performance. We also found that performance and legitimacy have a negative relationship with pressure for change. Finally, we found that environmental (institutional) turbulence or change has an impact on the already established organization.

Acknowledgment

As my four-year journey studying PhD in the field of management comes to an end, there are so many people I would like to thank, for they have helped me make the most out of this journey. At the forefront is the Saudi Arabian Government and the pervious King of the Kingdom of Saudi Arabia, Abdullah Bin Abdul-Aziz, may Allah have mercy on his soul, and for his brother our King now, King Salman Bin Abdul-Aziz, may Allah bless him, for giving me the opportunity to pursue my postgraduate studies through the King Abdullah Bin Abdul-Aziz Scholarship Program. Also, I would like to thank the previous Minister of Transport, Mr. Gebara Bin Eid and the new Minister Abdullah Al Muqbel, for facilitating my access to all the data needed in this paper.

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Chapter 1

- Introduction

The railway industry is known as one of the main transportation tools that can sustain an economy and develop countries. This industry has developed in the last two centuries and advanced countries keep pushing its technology to the limit to improve the railways sector. Japan can be an example of these countries, where you can find the Shinkansen or (the Bullet-train) which has a top speed of 300 km/h. Nowadays, Japan is about to introduce a new Maglev train (derived from magnetic levitation) which has a top speed of 603 km/h.

To understand how the railway industry has developed, in this section we examine the historical background of the railway industry's development. Then we turn our attention to the first railway system in the Arabian Peninsula as well as to the current railway system in the Kingdom of Saudi Arabia. At the end of this section we discuss the main idea of this study.

1- The History of the Railways

- Rail Track Development

MacFadyen (2013) studied the history of the British railway system and his study discussed the start of the idea of the rail track and railway rolling stock development. According to his study, running vehicles along a track started long time ago and this idea goes back to Ancient Greece. At that time tracks were worn into rock by wagons which were moved by hand or animal. The passage of wheeled vehicles, at the time of Ancient Romans, used sets of long smooth stones on their road. The wooden railed wagon ways appeared by the 16th century which were used to move small trucks. In 1722, and as one of the earliest railways in Scotland which was the Tranent to Cockenzie Waggonway, was established. This

horse-drawn line used wooden rails and it was a 2 ½ mile long route for mine wagons in East Lothian (MacFadyen 2013).

In the early 1800s, Britain was to pioneer the steam railway and remain the world leader in railway development for over 150 years. In the late 18th century, Benjamin Outram developed the railway with the use of L-shaped iron rails. Along with the railway development, an engineer called William Jessop had made up from cast iron a type of rail which was flat on top. These were used in conjunction with wheels which had a flange on their inside edges which allowed the wheels to stay on the track (MacFadyen 2013).

- **Rolling Stock Engine Development**

In 1712 and regarding power generation, an engineer called Thomas Newcomen invented the first practical pumping engine powered by steam and it was subsequently used to pump water out of mines up and down England. On the other hand, in 1803 Richard Trevithick built the world's first steam locomotive. When the Stockton and Darlington Railway was opened in 1825, it featured the first steam powered engine railway for passenger trafficking. A civil and mechanical engineer from the North of England called George Stephenson together with his son Robert Stephenson invented the locomotive which influenced British railways for the next few years (MacFadyen 2013).

Obstacles such as a peat bog known as Chat Moss were overcome by Stephenson's design by having the railway line float over the seemingly bottomless peat bog on a base of heather, branches and moss. Stephenson, the "Father of Railways", as he was known among other people in the business, also

developed the civil engineering on the railways. He, and later his son, were responsible of creating the engines for the trains. On the Stockton and Darlington line, “Locomotion” took the lead as the first locomotive constructed on that line. However, the best engine known for Stephenson at that time was the “Rocket”. It proved its power on the Rainhill Trials where there was a competition set up to provide locomotives for the Liverpool to Manchester route. The engine in principle was designed by Robert Stephenson with some recommendations given from his father. During the contest, ten locomotives were presented, five of which got the acceptance to participate in the line and they were; Sans Pareil, Cycloped, Novelty, Perseverance, and Rocket. Cycloped was powered with a horse walking on a treadmill while the others were powered by steam. Only the Rocket was able to get to the finish line (MacFadyen 2013).

2- The History of the Railway in Arabian Peninsula

- Hejaz Railway

Here, we examine the first railway system in the Arabian Peninsula, where we discuss the Ottoman Railway line called the Hejaz Railway. At that time, it was planned by the Ottoman Empire to facilitate pilgrimage transportation to the holy cities of Mecca and Medina. The idea of constructing a railway in the Hejaz region was first put forward by a German-American engineer, Dr. Charles Zimpel, in 1864 (Hülagü 2010).

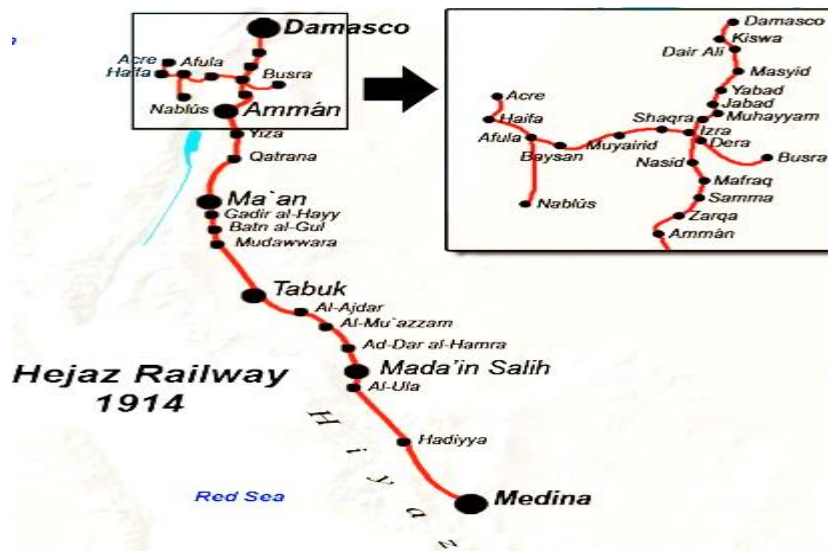
According to Hülagü (2010), the Emperor or the Sultan at that time was not able to undertake a series of valuable railroad construction projects. However, such projects were revived in the era of Sultan Abdulhamid II, the last great Ottoman Sultan. The Sultan approved the Hejaz Railway project, considering that the railway would help improve the economic and transportation as well as the defense

of the empire against foreign attacks and pave the way for international diplomacy. On May 2, 1900, he issued an imperial edict which sowed the seeds of a decades old dream. Consequently, the rail lines were laid from Damascus to Medina. The decision was that the project would be financed, built, and operated by the Ottoman Empire alone. The building of the Hijaz Railway presented a financial and engineering challenge. It required a budget of around \$16 million dollars, and this was at the turn of the century when the dollar was worth a lot more than it is today. So, the Sultan appealed to the Muslims of the world for their emotional and financial support. Although the Hejaz Railway was short-lived, it left a remarkable legacy of the early twentieth century since it connected Istanbul, Damascus, Mecca, Medina, and the Red Sea.

In 1908, the Hejaz Railway started to operate and the lines were laid from Damascus to Medina as it can be seen in *map 1*. The main track from Damascus to Medina was 1,302 kilometers long and contained around 80 stations at an average distance of 16.3 km apart, which allowed for efficient track monitoring, maintenance and rapid-response troop deployment for additional protection against anticipated Bedouin assaults.

According to Eman (2004) on September 1, 1908, the railway officially opened and until the year 1912 the Hejaz line was transporting 30,000 pilgrims a year. At that time, the pilgrimage had just become easier, business boomed, and by the year 1914 the annual load had reached 300,000 passengers.

Map 1: Hijaz Railway



Source: *The Hejaz Railway*, Nicholson J. 2005

Unfortunately, the line was severely damaged during World War I (1914-1918) by Lawrence of Arabia and the Arab revolt. By 1920, the line's part of the Arabian Peninsula was totally damaged and stopped operating.

3- The Importance of the Saudi Railway Transportation Nowadays

The railway system is known as the corner stone of the national economy in the developed world. Although railways projects are known to have high capital investments in the beginning, they have a relatively low operation cost. Moreover, the longer the transportation distance and the larger the transported material, the more cost-effective railway transportation becomes. This means that the feasibility and economic success of major industrial and agricultural projects depend heavily on the availability of a reliable, accountable and cost-effective transportation system (SRO 2011).

In the domestic stage, the geographical expanse of the Kingdom of Saudi Arabia, the obvious economic benefits of connecting the different regions of the Kingdom by railways and the discovery of large mineral ores in different parts of the Kingdom; such as Phosphate deposits in Hazm Al-Jalamid north of Sakakah and bauxite deposits in Al-Zubayrah; northeast of Buraydah, made the expansion of the current railways network inevitable (SAR 2011). *Map 2*, as can be seen below, shows the whole railway network in Saudi Arabia, both those in current operation and those planned.

Map 2: The Saudi Future Railway Network Map



Source: The Saudi Railway Organization (SRO)

Map 2 shows that the Kingdom of Saudi Arabia adopted a very ambitious program to develop and expand railways services in the Kingdom. Currently, this program includes four major projects; two of them were assigned to the Saudi Railway Organization (SRO) while the third and fourth were assigned to the Ministry of Finance represented by the Saudi Public Investment Fund and the Saudi Arabian Mining Company (Ma'aden) which introduced the new Saudi Railway Company (SAR).

4- The Saudi Railway Organization (SRO)

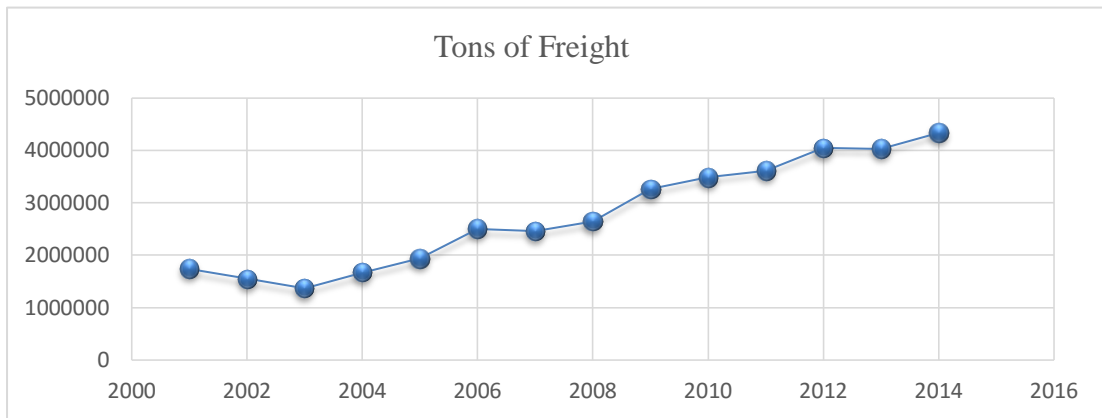
The Saudi Railway line from Dammam to Riyadh is considered as one of the oldest railway systems in the Middle East region. The idea of establishing a railway line in Saudi Arabia was first introduced in October 1947, when King Abdul Aziz gave his orders to construct a railway line that connects the Dammam Port to the Capital, Riyadh. The railway was introduced to facilitate the transport of goods of Saudi Aramco from ports located on the coast of the Persian Gulf to warehouses in Dhahran. Construction started in October 1947 and the line was officially opened by King Abdul Aziz on October, 20, 1951. It was initially run by Aramco, but subsequently transferred to the state and since 1968 has been operated as a public corporation called The Saudi Railways Organization (SRO). Several development projects have been completed since then, including an extension of the line to Riyadh, construction of several passenger terminals, and the opening of a dry port in Riyadh. In 1985, another line was constructed on 450 km to save 4 instead of 7 hours. Now SRO is a state-owned organization that provides passenger and freight services on two main lines totaling 1,018 km. SRO owns more than 2,277 railroad cars for transporting passengers and solid and liquid goods. It has also established new stations in Riyadh, Dammam and Hofuf, in addition to updating the passengers and cargo cars, building maintenance centers, and constructing Riyadh's dry port. *Figure 2*, on page 27, shows the timeline of SRO and its institutional change from 1947-2005.

1- SRO freight operation

SRO freight's operation which moves goods from Dammam port to Riyadh dry port is as vital as their passenger operation. In this study, we notice that the number of moved tons of freight was increasing

rapidly between 2003 and 2014. *Chart 1* shows the increase of moved tons. Accordingly, May 6, 2003, is the date when the Saudi government decided to start the technical studies to establish the North-South railway; SAR. Also *chart 1* shows that in 2006 up to 2008 SRO slowed down its capability of moving tons of freight, due to the fact that SAR received its operation license in May, 24, 2006. Therefore, by 2006 the railway sector became a duopoly shared by SRO and SAR.

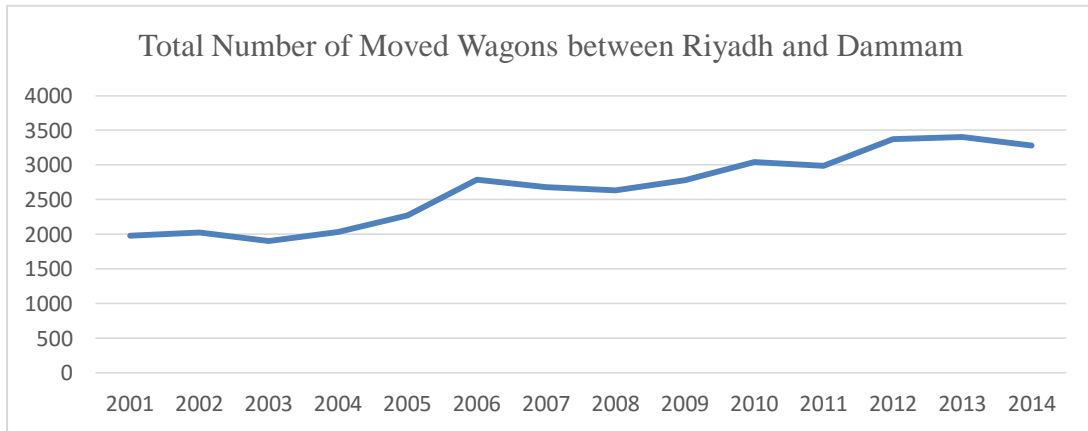
Chart 1: Tons of Freight SRO



Source: The Saudi Railway Organization (SRO)

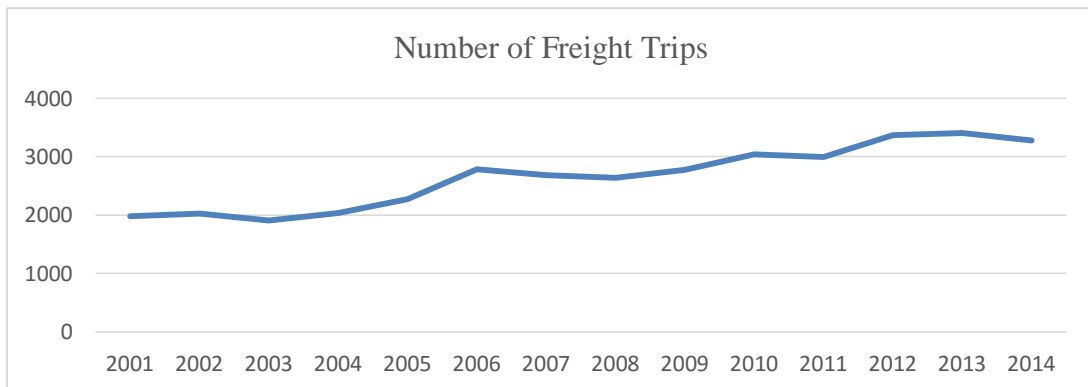
Also, SRO added various numbers of new and efficient cars which help SRO move more goods between Riyadh and Dammam. The number of moved wagons can be seen in *chart 2*. *Chart 3* shows the number of freight trips between Riyadh and Dammam during 2001-2014.

Chart 2: Total Number of Moved Wagons between Riyadh and Dammam SRO



Source: The Saudi Railway Organization (SRO)

Chart 3: Number of Freight Trips SRO



Source: The Saudi Railway Organization (SRO)

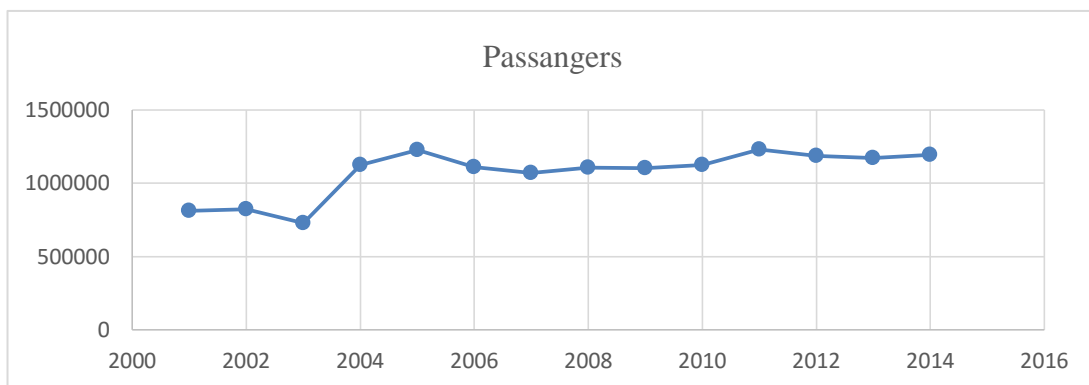
2- SRO Passenger Operation

Understanding the importance of passenger railway as a transportation option and economic development tool could be the major concern of SRO in Saudi Arabia. People can travel by any other transportation means such as cars, airplanes and buses but the experience of traveling by train is a

different experience. Also, the safety issue of traveling by train can be another concern and may reduce the number of travelers. This can make traveling by train the last option; however, in *chart 4* we could see that the number of passengers increased between 2001 and 2014 especially from 2003 to 2014. Also, *chart 5* shows the number of passenger trips for the same period, 2001-2014.

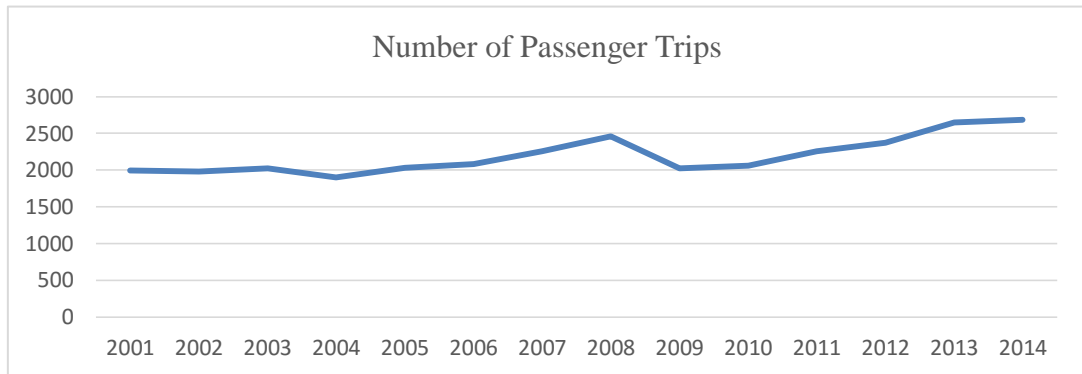
SRO passenger train is considered as one of the slowest trains in the Middle East, first because of the safety issue and avoiding accidents and second because the train moves across an area which is 70% desert. This area is hit by sand storms throughout the year where sand covers the rail tracks causing most train accidents in Saudi Arabia.

Chart 4: Number of Passengers SRO



Source: The Saudi Railway Organization (SRO)

Chart 5: Number of Passenger Trips SRO



Source: The Saudi Railway Organization (SRO)

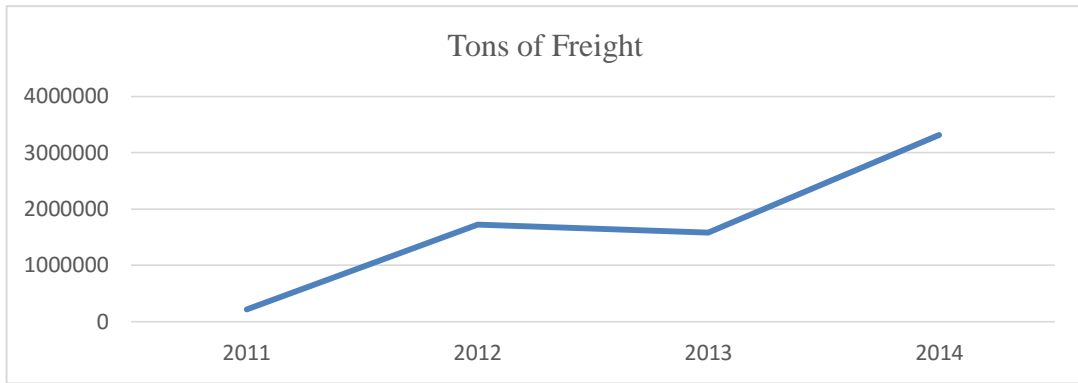
5- The Saudi Railway Company (SAR)

Accordingly, the government adopted a very ambitious program to develop and expand railway services in the Kingdom. Currently, this program includes three major projects; two of them were assigned to SRO while the third was assigned to the Ministry of Finance represented by The Saudi Public Investment Fund (PIF) and the Saudi Arabian Mining Company (Ma'aden). PIF established the Saudi Railway Company (SAR) as a private company.

SAR was established in 2006 as a new name in the domestic transport market seeking to satisfy market needs by providing the best advanced railway services encompassing transport of passengers, freight, minerals and transit services between the neighboring countries. SAR is one of the biggest infrastructure projects in Saudi Arabia that support the national industrial sector as well as provide a new, safe means to transport passengers among the Saudi cities. According to SAR CEO, SAR has freighted more than 1.7 million tons of phosphate during 2011-2012, replacing the need for a number of 69,000

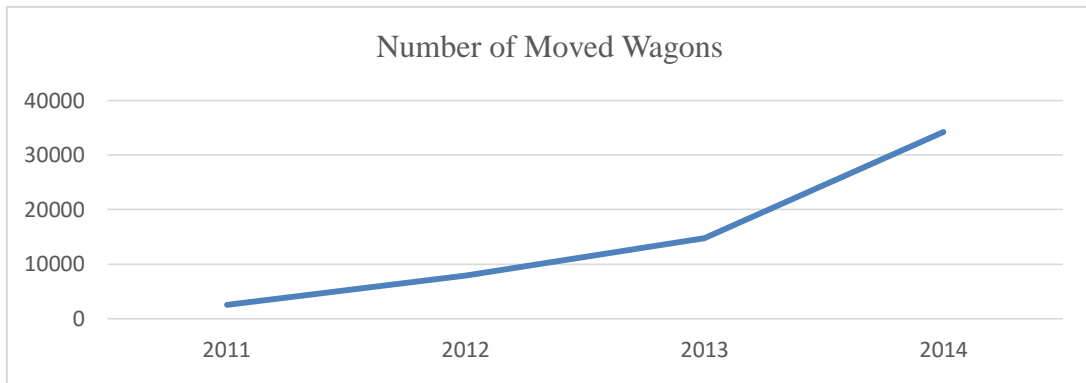
trucks running on the road between the mines and the Madden factories. *Chart 6* shows how many tons of freight were moved whereas *chart 7* shows the number of moved wagons.

Chart 6: Tons of Freight SAR



Source: The Saudi Railway Company (SAR)

Chart 7: Number of Moved Wagons SAR



Source: The Saudi Railway Company (SAR)

The current freight and the future passenger railway will link a number of cities, neighboring areas and villages which will lead to their development socially, economically, industrially, agriculturally and commercially. In the future, this will help also to establish advanced industries in the north of the Kingdom of Saudi Arabia.

According to the SAR project, which is known as the North-South Railway (NSR), and it is one of the largest railway projects in the world that is currently under construction. Upon completion of the SAR project, it will be approximately 2,750 KM long. The SAR Project consists of two main lines, one originating in Riyadh running northwest toward Al Haditha near the Jordanian border. This line will pass through Majma'a, Qassim, Hail and Al-Jawf. The second main line running from Al-Jalamid mine in the Northern province and then passing by Al-Jawf and Hail until a point referred to as "AlBaithah Junction" in Qassim province then going east to the processing and export facilities in Ras AlKhair in the Eastern province on the coast of the Arabian Gulf (SAR 2011) as outlined in *map 3*.

Map 3: Operated and Under Construction Line of SAR



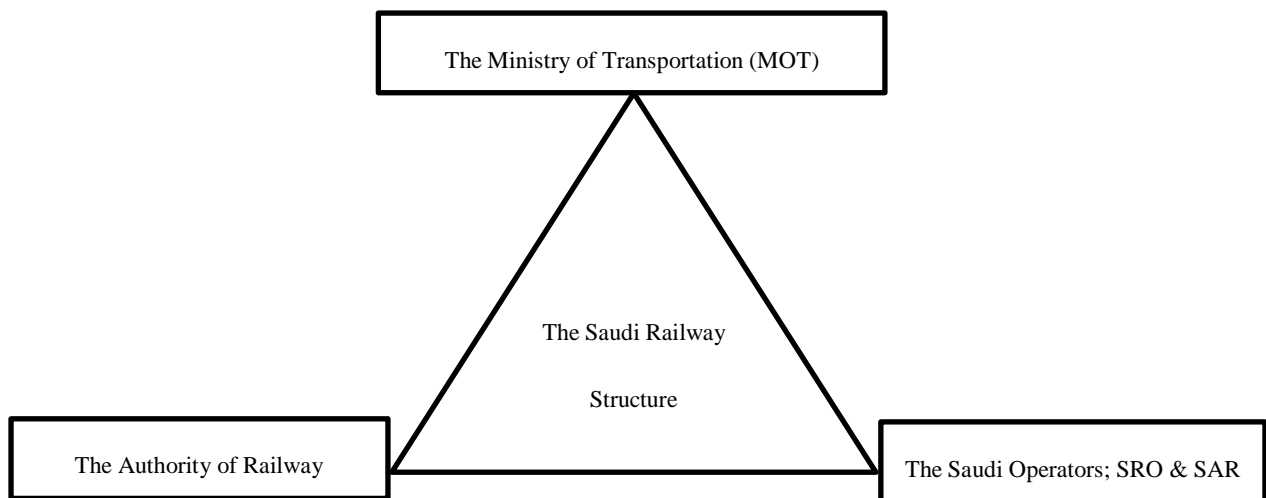
Source: The Saudi Railway Company (SAR)

6- The Institutional Change and the Expanding Project

The Saudi Railway Authority, headed by the Ministry of Transport (MOT), monitors the operation of SRO and SAR. Based on the Government's objective to extend new lines to cover other regions in the Kingdom and to reach other neighboring countries due to the importance of rail transportation, MOT

conducted many studies about the expansion of the railway network. The Kingdom's Higher Economic Council issued its approval of executing the expansion, after inviting financial, technical and legal specialists to prepare the project's documents. It is open for the private sector and also for international investment. The institutional structure of the Saudi Railway sector as can be seen in *figure 1* shows the government tendency to privatize this sector by investing and developing SRO and SAR. This structure clarifies the institutional roles that the Ministry of Transportation (MOT) as a regulator, the Authority of Railway as an infrastructure manager and supervisor and SRO and SAR as operators, play in the current railway sector environment.

Figure 1: The Structure of the Railway Sector in Saudi Arabia



- The Haramin High Speed Line

Map 4 shows the Haramin high speed line which links Medina, Makkah and Jeddah, this line will serve the pilgrimage as well as people living in these cities. This line is expected to transport more than

15 million visitors and Saudi citizens. It will also reduce the number of buses and other private transportation vehicles.

Map 4: Haramin High Speed Railway



Source: The Saudi Railway Organization (SRO)

This line will be the first high speed railway in the Middle East. A Spanish company called Renfe signed a contract with SRO to provide the Haramin high speed railway rolling stocks with a speed that will reach 300 km per hour.

- **The Land-bridge Line**

The land-bridge line aims to connect the Saudi ports in the Arabian Gulf with other ports in the Red Sea. This project was one of SRO projects. However, the government, after long discussions considering the rapid launch of SAR, decided to terminate the contract in 2013 with SRO and signed this project's

contract with SAR. The following *Map 5* shows the land-bridge line. The lines from Dammam to Riyadh are operated by SRO but the lines from Riyadh to Jeddah, as already mentioned, is under construction by SAR.

Map 5: The Land-bridge Line



Source: The Saudi Railway Company (SAR), Riyadh-Jeddah Line

- **Gulf Cooperation Council (GCC) Railway Line**

At the international stage, the idea of establishing a railway network to link the Gulf Cooperation Council (GCC) six countries, namely; Kingdom of Saudi Arabia, United Arab Emirates, Qatar, Oman, Kingdom of Bahrain, and Kuwait, emerged in 2000. Experts believe that such network would increase the level of trade exchange between the countries of the region, alleviate traffic congestion and reduce pollution. It is expected that this network will be the core of the network project connecting all cities of the Middle East. Countries in the region have realized the need for an initiative to cover the region as a whole, prompting them in 1999 to adopt a development plan for an integrated transport system in Western

Asia under the auspices of the United Nations - Economic and Social Commission for Western Asia (ESCWA). This initiative paved the way to studying the economic feasibility for a railway line linking the Member States of the Gulf Cooperation Council for the Arab Gulf States.

It is expected that the total length of the network will be about 2,000 km starting from the Iraq-Kuwait borders up to Oman passing through Qatar, Saudi Arabia, in parallel to the coast of the Arabian Gulf as can be seen in *map 6*. Studies indicate an expected growth in figures of goods' transport by train after the implementation of the Gulf railway network. It is expected that an estimated 31 million tons of goods will be transported by train in 2016 consisting of 17 million tons of heavy raw materials and 4.1 million tons of goods imported by some of the GCC countries from abroad.

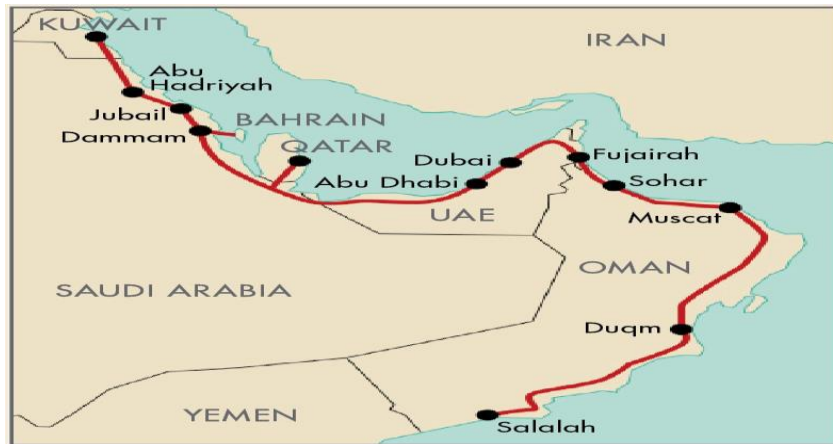
The following *table 1*, which shows the level of transport imported by all modes of transportation in the years 2004-2006 (in million tons), compared with the expected to be only transferred by train in 2016.

Table 1: GCC Current Transportation and Expected by Train (in Million Tons):

States	Transfer rate for the period (2004-2006) by means of current transportation	Expected by train only in 2016
Kuwait	16.3	7.5
Bahrain	5.1	6.7
Qatar	6.6	4.3
Oman	1.8	2.8
United Arab Emirates	3.7	7.1
Saudi Arabia	3.9	1.6
Other Arab states	2.6	1
Total	40	31.1

Source: The Saudi Railway Organization (SRO)

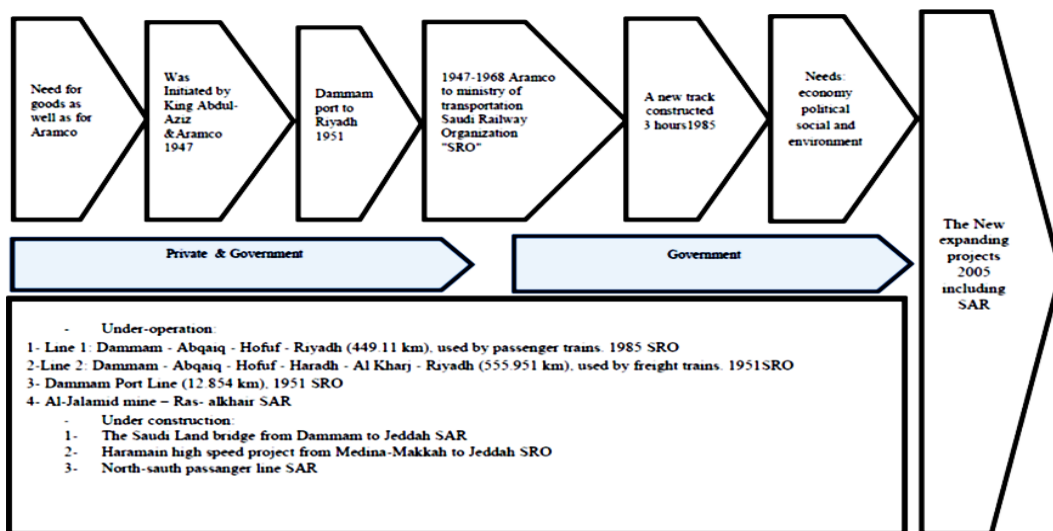
Map 6: GCC Railway



Source: The Saudi Railway Organization (SRO)

Figure 2 explains the trend of the railway institutional change and development. As mentioned above, SRO has changed from 1947 to 2005 and since then a new company joined the Saudi railway business which is SAR.

Figure 2: Institution Timeline of the Railway in Saudi Arabia for SRO and SAR



Source: the Saudi Railway Organization

In this study, we aim to investigate the liability of renewal of the Saudi Railway Organization (SRO).

The first section highlights the establishment of SRO and presents the problem statement including the

research question. In the second section, we develop our conceptual model and the main propositions of this research. In the third section, we examine the research methodology and how we collect the research data. In the final section, we analyze the data and discuss the findings and conclusion of this paper. In order to understand the process of organizational renewal in the Saudi Railway Organization (SRO), it is important to understand the establishment, in some detail, the history of the Saudi Railway Organizations (SRO) which was discussed in previous sections.

7- Introduction to the Problem Statement and Research Question

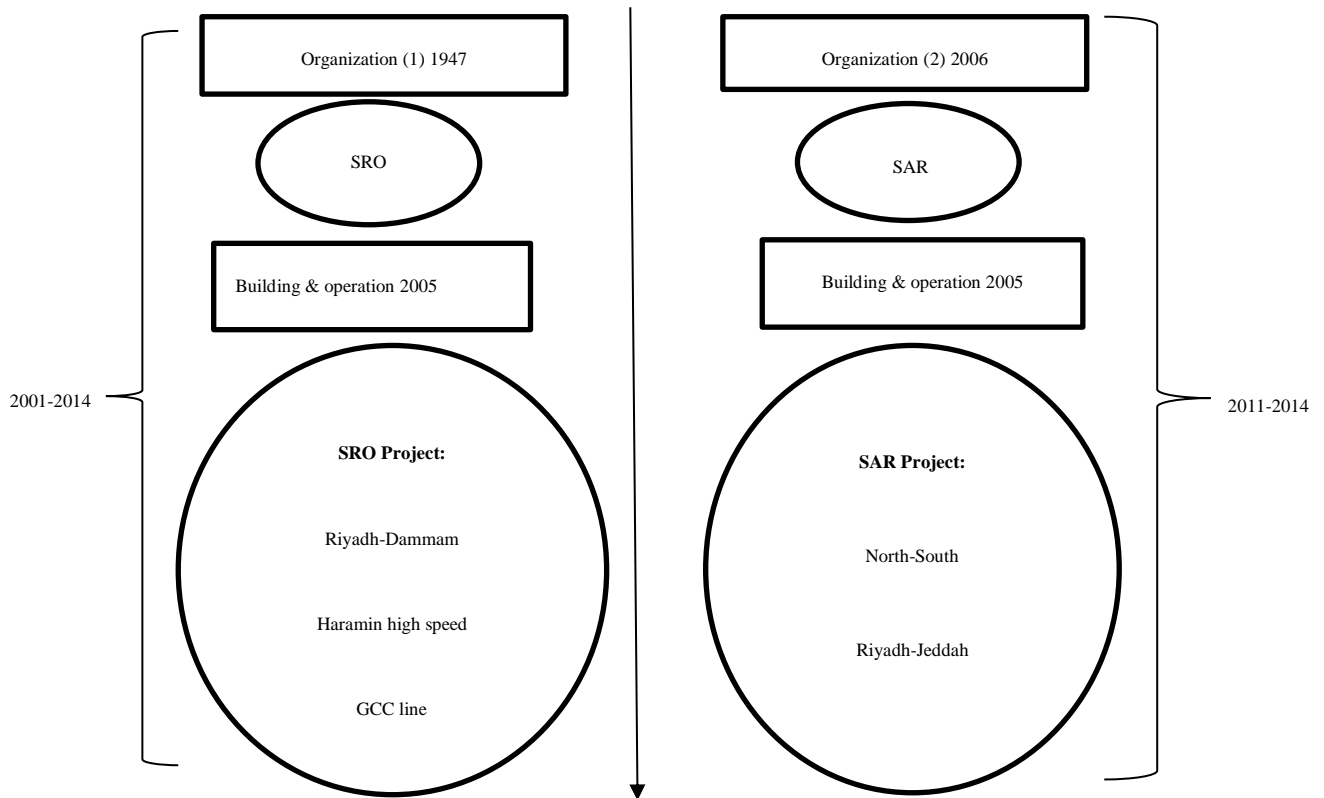
SRO went through different stages of change and development as can be seen in *figure 1 on page 23 and figure 2 on page 27*. In 2005, new projects were proposed for SRO by the Saudi government. The initiation of new expanding projects resulted in SRO being unable to adapt to new environmental demands. From this result we can summarize two consequences. First, the SRO failure to adapt to the new project indicates that SRO could be exhibiting structure inertia. Second, this failure in its performance could have impacted SRO's legitimacy. As a result the Saudi government established a new railway organization, the Saudi Railway Company (SAR) in 2006, to carry out the new project, but it did not close down SRO. Instead, SRO was given the opportunity to try again since it was determined that having two functioning railway organizations would be better than just one. Part of the impact on SRO's legitimacy has been to stimulate an attempt by SRO to enhance its organizational capabilities, performance and learning.

We examine the period from 2001 to 2014 and focus on SRO's attempts at organizational renewal. One reason behind choosing this period of time is that the Saudi government initiated its new expansion

project from 2005. At the same time, the Saudi government has pushed a new private company into the market which is called Saudi Railway Company (SAR). The launch of SAR is an indication of the loss of SRO's legitimacy. Hence, we considered this period of time to be a critical one in understanding SRO's attempts at overcoming the liability of renewal. We will examine SRO in the period 2001-2005 as the pre-SAR institutional environment. We will then examine SRO from 2005-2014 as the period of strong environmental change, since this is the time when SAR was established, even though it began operations from 2011.

On the one hand, we consider the period 2005–2014 of the new company SAR as a substantial institutional change in the Saudi Railway sector. Since SAR has three years of freight operation from 2011-2014, we assume that SAR's freight operation is one reason of the overcoming of the liability of renewal at SRO. *Figure 3* shows the development of the railway's operators as well as the period of our study.

Figure 3: The Development of Railway's Operators



On the other hand, SAR as a new company may survive the period of liability of newness. We need to understand this concept since we believe it underpins the liability of renewal that SRO is undergoing. According to Aldrich and Fiol (1994) study, where they discussed the ability to survive the liability of newness and how to gain legitimacy for newly established organization they recognize a multi-level nested structure for legitimacy. In *Table 2* we replicate the four levels of social context as proposed by Aldrich and Fiol (1994) which founding entrepreneurs must work in in order to build trust, reliability, reputation and institutional legitimacy.

Table 2: Entrepreneurial Strategies to Promote New Industry Development (Aldrich and Fiol, 1994)

Type of legitimacy		
Level of Analysis	Cognitive	Sociopolitical
Organizational/ trust	Develop knowledge base via symbolic language and behavior.	Develop trust in the new activity by maintaining internally consistent stories.
Intraindustry/ reliability	Develop knowledge base by encouraging convergence around dominant design.	Develop perceptions of reliability by mobilizing to take collective action.
Interindustry/ reputation	Develop knowledge base by promoting activity through third party actor.	Develop reputation of a new activity as a reality by negotiating and compromising with other industries.
Institutional / legitimacy	Develop knowledge base by creating linkages with established educational curricula.	Develop legitimacy by organizing collective marketing and lobbying efforts.

Source: Aldrich and Fiol, 1994.

- Building trust at SAR can be seen by the rapid launch of their freight operation and how the CEO Dr. Romih Alromih selects employees based on their educational level as well as their experience. Also, sharing the achievement of SAR and celebrating it as they were one team following one leader. This team develops trust in the new activities of the freight operation. By transporting millions of tons of Phosphate and Bauxite, SAR has internally developed stories of achievement consistently.
- Achieving reliability at SAR by its monopoly of moving Phosphate and Bauxite and how SAR is proud of being the first mover in this freight operation, where SAR's team work day and night to move million tons of Phosphate and Bauxite from the mine to the factory.
- SAR starts to gain reputation by its line that goes across different cities and villages. In these cities and villages, companies that aim to reduce their cost of transportation sign contracts with

SAR to move goods. SAR became the first mining line since the beginning of railways in Saudi Arabia. As we mentioned, SAR moves Phosphate and Bauxite for Ma'adin mining company.

- Gaining legitimacy can be seen first in SAR attempts to establish relationships with educational institutions in Saudi Arabia aiming to increase the level of Railway knowledge. As the Saudi government recognizes SAR as an efficient company in terms of punctuation and efficiency of constructing the north-south line, the Riyadh-Jeddah line which is called the land-bridge was also assigned to SAR.

In this study, we notice that we need to have a similar discussion of SRO's attempts to re-establish its legitimacy as outlined in the previous page's description of the influence of the liability of renewal on cognitive and sociopolitical legitimacy by level of analysis as can be seen in *table 3* (Methe' and Alshehri, 2015).

Table 3: Renewable Strategies to Promote Established Industry Re-development.

Type of legitimacy in terms of liability of renewal		
Level of Analysis	Cognitive	Sociopolitical
Organizational/ re-building trust	Unlearning old routines and establish new routines. Re-image symbolic language and behavior	Re-establish trust in the new routine by re-forming the vision for organization.
Intraindustry/ re-building reliability	Unlearning old routine and establishing new routine re-vise the dominant design.	Undo damaged perceptions of reliability by swift corrective actions in line with the new vision
Interindustry/ re-building reputation	Unlearning old routine and establishing new routine by reconnecting with third party actor.	Undo damaged reputation by actions which reframe the network connections with other industries.
Institutional / re-building legitimacy	Unlearning old routine and establishing new routine by recreating linkages with and developing new educational curricula.	Re-establish legitimacy by reforming the criteria needed for status, through marketing and lobbying effort

- Rebuilding trust at SRO can be seen by importing efficient rolling stocks for both freight and passenger operation which can be seen as a reflection of the fact that old rolling stocks were the main cause of train accidents. SRO is considered to have old infrastructure, thus it started to build new bridges and maintain the rail tracks. SRO as a public owned organization has to face, announce and share all its achievement and failure with the Saudi media. It has an education center in Dammam headquarters operating to develop SRO employees only. These changes since 2001 can be seen as re-forming the vision for SRO however in reality it still cannot benefit from its achievements to rebuild trust because of the inertia of old routines.
- Rebuilding reliability at SRO shows no change even with upgrading its rolling stock or maintaining tracks. Although SRO is about to celebrate 65th years of operation, it is still not reliable in terms of its capability to move goods and passengers. Staff at SRO are considered to follow a governmental routine (working to get a salary even if the organization is not profitable, because the government pays the salary anyway) which has an impact on their teamwork and as a result affect their outcome. So, SRO has to unlearn the old routine and increase its ability to be self-dependent and then become a private organization.
- Re-building reputation by signing a contract with a maintenance company that can take care of the rail tracks. This allows SRO to prevent any government blame if any accident happened by the dereliction of the maintenance company. Also, SRO tried to rebuild reputation by offering discount tickets for students living between Dammam and Riyadh. According to SRO President, Engineer Mohamed Alsuwaiket, SRO sees the safety issue as its priority, so he requested all

trains' drivers to slow the speed down at the area of frequent accidents which can help to decrease the number of accidents. We think that these actions are attempts to undo the damaged reputation and they are actions that reframe the network connections with other industries.

- SRO loss of legitimacy is one of our main focuses in this study. Also, by not finishing the Haramin high speed project, SRO is facing further loss of its legitimacy of being the first railway organization to build a high speed system. Rebuilding or regaining legitimacy can occur by recreating linkages with, and developing new educational curricula, and by attempts to market to and lobby important stakeholders.

8- Introduction of the Main Idea of This Study

Organizational change remains an important field of research in management for many scholars. Many schools of thought have discussed the period of change that new or established organizations need in order to adapt to a new environment as a critical time in which some organizations may fail. Aldrich and Fiol (1994) discussed the birth of an organization and its ability to survive as a period of "liability of newness". They argued that this period of time can be a critical one for a new organization to adapt to the new environment. This kind of struggling to survive during the liability of newness phase may increase the probability of gaining or losing organizational legitimacy. On the other hand, Freeman, Carroll and Hanna (1983) argued that organizational death can occur at any time or age. We contend that organizational death and loss is seen as resulting from organizational rigidities that may happen at any time or age and for an incumbent organization attempting to regain its performance after a loss, it enters a period of risk for losing organizational legitimacy, we term this period the liability of renewal.

Structural inertia is an implicit aspect of this study which can be a cause as well as an obstacle of organizational change. According to Larsen and Lomi, page 275 (2002) “as inertia increases the likelihood of successful change becomes smaller, in turn prolonged period of stasis increase the pressure for change in the organization. As pressure for change increases, it is reasonable to expect that at least some new changes attempts will be made”. An organization seeks to change in order to gain sustained competitive advantage. In addition, an organization tends to change its tangible and intangible elements in order to be successful. Therefore, an organization must have processes in place for continued learning and adaptation which can be called the organizational renewal process. What affects or stimulates this renewal process and how it operates within an organization is an important aspect that is still not well understood.

Amburgey, Kelly and Barnett, (1993) argued that whenever an organization initiates a major change it resets its organizational clock. We contend that resetting an organizational clock is equal to changing organizational capabilities that lead to attempts at regaining legitimacy through improving performance, which leads to a hazard state², which we call the liability of renewal. The liability of renewal, in our case, can be defined as whenever an old established organization tries to minimize errors to re-gain legitimacy throughout a process of organizational learning from changes in capabilities which aim to improve its performance. In our model we show how an organization can put under consideration the advantages and disadvantages of a long period of operation in terms of its attempts at overcoming the liability of renewal. The model considers changes in organizational capability as changes in organizational learning. And if the model does not record changes it will directly show that the organization is experiencing inertia.

² By hazard state we mean a situation in which the probability of the organization failing has increased.

We develop a model of organizational renewal utilizing researches from various management schools of thought, such as Institutional Economics, Population Ecology, and Organizational Learning. Our model relates how changes in legitimacy and performance affect pressure for change on an organization. Further, our model relates how the organizational renewal process reflects on the balance between the dynamic aspect of organizational learning as demonstrated by changes in capabilities and the stabilizing aspects of organizational inertia.

In this study we are examining two organizations within the Saudi Arabian railway sector. We analyze the Saudi Railway Organization (SRO) in terms of its freight and passenger operation from 2001-2014 and also the freight operation at the Saudi Railway Company SAR from 2011-2014. We also expect that the new entrant SAR creates an environmental (institutional) turbulence or change that has an impact on the existing organization SRO. So, we examine SRO before and after SAR's entrance into the Saudi Railway sector. We found support for our model in that most of our results were in the hypothesized direction. We found that learning from changes in organizational capability has a positive effect on performance. And that legitimacy has a positive effect on performance. We also found that performance and legitimacy have a negative relationship with pressure for change. Finally, we found that environmental (institutional) turbulence or change has an impact on the already established organization.

Chapter 2

1- Literature Review and Hypotheses Development

- Introduction

In this section, we examine the previous research literatures that are relevant to our study. We first begin by examining research literatures which focus on railway and railway development. We then turn our attention to institutional economics and organizational change. We then look into the elements of population ecology research which are relevant to organizational change. At the end of this section and after examining these research literatures we turn our attention to how we developed our conceptual model and propositions.

1.1. Railway System and Organizational Change, Empirical Studies on Railways Systems

In order to put SRO's and SAR's change attempts in context, we need to examine how railway organizations have changed overtime. Rietveld and Stough (2006) examined institutional and regulatory aspect of sustainable transport from across national perspective. They found that the role that institutions play in sustainable development is not clear but they agreed that institution play an important role in the economic success of rail organizations. Mulder, Lijesen and Driessen (2005), studied the assessment of cost and benefit of the structural change in the Dutch railway system in the late 1990s. Accordingly, their study analyzed the flexibility of economies of scope in the Dutch railways system and how institutional changes have an effect on the efficiency of both passenger and freight. They found that institutional change did not improve the efficiency of the passenger operators. However freight operations have

improved through this institutional change (Mulder, Lijesen and Driessen 2005). Nevertheless, our study focuses mainly on institutional change as environmental turbulence and how that has an effect on the changes of organizational capability. We assume that changes may and may not improve railway performance. We also assume that the level of organizational adaptation to the new environment can be decided based on current capabilities and the pressure for change which is influenced by the legitimacy of the organization as well as by the organization's performance.

Organizational change in the railway system is connected with the restructuring of the institutional environment in terms of nationalization and privatization. In studying privatization, Misutani and Uranishi (2003) looked into the main factors that increase the total factor productivity (TFP) of the privatization of the Japanese railway. They found that TFP was growing at 0.59% annually. Another study by Mitsutani and Nakamura (2004) aimed to explain the Japanese approach to railway reform and lessons learned from the privatization process. They found that the Japanese approach to privatization improved productivity, cut operating deficits, decreased fares, and provided better services. In addition, Obermauer (2002) argued that fully privatized organizations were more efficient in the domestic and the international market. A study by Lodge (2003) discussed the regulatory change in the railways of Britain and Germany. Lodge (2003) argued that organizational learning and transfer processes could be better understood through an institutional perspective in each country. Thus the institutional environment is an important consideration. Also from these studies we believe that state-owned organizations have constraints on their productivity and such constraints impose structural inertia. This appears to be the situation currently confronted by SRO. But in the case of SAR as a private company it has less constraints

on its productivity. Oum and Yu (1994) discussed the productive efficiency of the rail way sector of 19 countries. They aimed to identify the effects on efficiency of public subsidy and the level of managerial independency. They found that railway systems with less dependence are significantly more efficient on public subsidies than others with high dependence. They also found that railways with high level of managerial independency from regulatory authority tend to achieve higher efficiency (Oum and Yu 1994).

Lan and Lin (2006) measured the performance of railways in the EU regions that produce passenger and freight services by distinguishing technical inefficiency from service ineffectiveness. They found that railways which are distinguished by technical inefficiency and service ineffectiveness are negatively influenced by gross national income per capita, percentage of electrified lines, and line density.

Given the sensitivity of railway system to environmental change as well as the importance of transportation in the movement of goods and people, especially in developing countries, there is a need for studies which examine institutional attempts to renew their capabilities within the context of being state-owned as well as private within one sector and to understand the liabilities generated in this process. Although most of the empirical studies were focusing on aspects of changes at the railway sector level that may improve productivity or efficiency, in our study we focus on the changes in organizational capabilities in terms of operation which directly affect organizational performance. These changes result from institutional or environmental changes and how organizations react towards these changes by focusing on the level of performance. We explore these issues in details in the section below.

1.2. Institutional Economics and the Organizational Change

Institutional economics examines the role that institutions play in shaping economic behaviors. And that change in institutions can have an impact on organizations. Since organizations exist in an institutional setting, it is important to understand how institutions change and how these changes influence organizational change especially in terms of organizational legitimacy. Our study argues that the institutional environment has a strong influence on the legitimacy of an organization.

North (1991) has defined institutions as rules for governing the exchanges that occurs in society. Human beings have devised constraints on the institutional transformation process in order to regulate it, including formal and informal rules (North, 1991). An important notion of the study of Kingston and Caballero (2009) was that some theories indicated the importance of deliberate action in the birth of institutions usually through some political process, while other theories saw institutions as emerging through a more bottom up emergent evolutionary process. Holm's (1995) study has argued that understanding institutional change has problems which can be solved if institutions are seen as a nested system. He argued that the nested system is an interconnected, multilevel system in which each action-level is a framework for action and a product of action. His perspective on the nested system relies more on endogenous processes than exogenous forces in explaining institutional change (Holm, 1995).

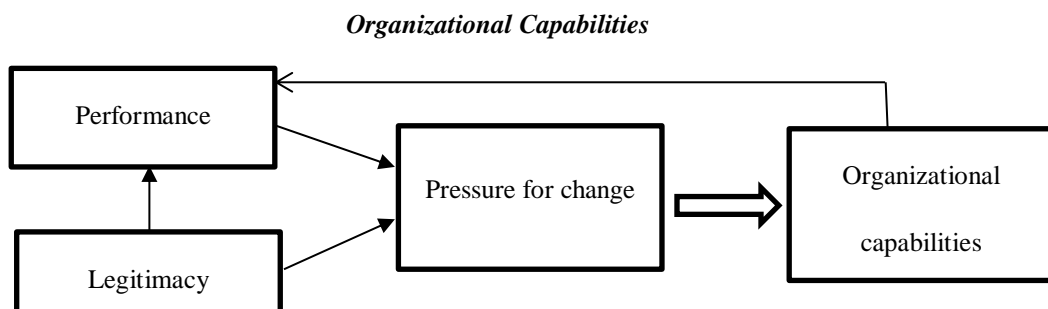
Greenwood and Hinings (1996) posited that the internal dynamic of an organization will strongly influence the ability to respond to pressure for change that originate from institutional sources. We contend that such institutional transformation processes have had an influence on organizational legitimacy which increases the likelihood of environmental pressure for change. We propose a model, which is a nested model that incorporates internal change processes nested within processes that affect

legitimacy and pressure for change. Organizations can choose to adapt to these pressure for change or not. Each alternative, to adapt or not, has risks associated with it.

Zucker (1987) defined the theoretical approach of institution to two concepts, one is the environment as institution and the other is the organization as institution. In this study, we considered the environment as an institution that affects organizational change. We assume that the level of organizational adaptation to the new environment can be decided based on current capabilities and the pressure for change which is influenced by the legitimacy as well as by the organization’s performance. Therefore, we assert that such action and subsequent reaction increase the likelihood of an organization surviving the period of liability of renewal. We describe the period of liability of renewal in more detail in the late section.

Organizational change theory suggests that environmental changes that cause organizational decline in performance will lead to pressure for change. We expect that decreases in organizational legitimacy will also influence performance and that both lower performance and loss of legitimacy will lead to pressure for change on the organization. We also expect that whenever the level of pressure for change increases, that may cause changes in organizational capabilities which lead to an improvement in performance. These relationships are summarized in this portion of our model in *figure 4*.

Figure 4: The Relationship between Legitimacy, Performance, Pressure for Change and



1.3. Population Ecology and Organizational Change:

Population Ecology theory contends that when an organization attempts to adapt to a new environment, usually it fails and ceases to exist. In essence population ecology argues that the environment selects for or against an organization. Organizations have a difficult time adapting to environmental changes. Structural inertia is an important aspect of this theory which can be seen as an obstacle to organizational change. Hannan and Freeman (1984) indicated that structural inertia influences most features of an organization's structure. In their study, they indicated two features are important understanding the influence of inertia on organizational structure: one is the organization's core (goals, forms of authority, core technology and marketing strategy) and the second is organization's peripheral that is established to protect an organization's core from uncertainty in the environment. They also predicted that core feature change will increase the probability of organizational failure and thus increasing the likelihood of an organization ceasing to exist (Hannan and Freeman, 1984). They noted that formal organizations have two important advantages over other collective actors; that is, their ability to perform reliably (in terms of capabilities) and to account rationally for their action (in terms of legitimacy). Both organizational reliability and accountability requires organizational structures that are reproducible or stable over time (Hannan and Freeman, 1984; Kelly and Amburgey, 1991). Alkaya and Herpaktan (2003) discussed the phase, barriers and variables that affect organization change. They found that if the aim is to have a successful change, the culture of an organization should be taken into account. Lunenburg (2010) concluded that internal and external forces can create the need for change in an organization and that would reduce resistance forces to change. Sastry (1997) also argued that internal factors influence organizational change such as routine for monitoring organization-environment fit and

trail period following a reorientation. Haveman (1992) proposed that organizational change can be beneficial if it builds on established routines and competences, thus we argue decreasing the liability of renewal. On the other hand, Gilbert (2005) discussed the distinction between resource rigidity and routine rigidity regarding effects of threat perception on inertia. He found that resource rigidity can be overcome but in doing this can simultaneously amplify routine rigidity.

We contend that during the time period of organizational change that is, the period of liability of renewal, changes in organizational capabilities, as seen in changes in resources, influence both the learning process which attempt to increase performance but can also be exhibited as lags as routines attempt to catch up with the new environmental demands. Thus the capability may remain inert and generate lags in adaptation and negatively affects changes in organizational capabilities.

In the discussion of Population Ecology, we saw how an organization may fail to adapt to new environmental turbulence or changes. The degree of failure matters. With catastrophic failure an organization ceases to exist, but with non- catastrophic failure an organization has an opportunity to renew itself. We assert that non- catastrophic failure to adapt to the new environment causes pressure for change to learn from failure. We expect that when pressure for change becomes high, organizations seek for new knowledge in order to add new capability, whereas when pressure for change becomes low an organization remains inert. While failure in the population ecology view leads to the demise of the organization, we adopt a dynamic capabilities view as put forward by Teece, Pisano and Shuen (1997). The dynamic capability concept suggests that failures that are less than catastrophic leads to lower performance and that in turn leads to adaptation through exploratory capability building activities.

Organizational capabilities are considered a core feature if they provide strategic differentiation for the organization (Barton, 1992). Case studies on firm capabilities and adaptation have primarily served to greatly explicate sources and causes of structural inertia and why firms are not able to adapt. Barton, (1992) argues for example, that "core capabilities can become core rigidities that can lead to organizational failure". As we noted we see this duality in Larsen and Lomi (2002), emphasized when they suggest that the "moving parts" of an idealized organizational system as representing the dynamic duality between organizational inertia and the evolution of capabilities.

In terms of dynamic capability, Ambrosini, Bowman, & Collier, (2009) suggested three levels of dynamic capabilities. According to their study, "these levels are related to managers' perceptions of environmental dynamism. The first level is "incremental dynamic capabilities" which are concerned with the continuous improvement of the firm's resource base. The second level is "renewing dynamic capabilities" which are refreshing, adapting and augmenting the resource base. These two levels are usually represented as dynamic capabilities. The third level is "regenerative dynamic capabilities" which have an impact on firm current set of dynamic capabilities". Capabilities have an effect on organizational performance. A study by Protogerou, Caloghirou and Lioukas (2008) investigated the direct and indirect relationships between dynamic capabilities and firm performance. They found that dynamic capabilities have a positive impact on firm performance during environmental change.

We contend that attempts at change even with the attendant organizational liability of renewal offer a survival chance for organization. The organization must renew its capabilities as seen in increased use of

resources to adapt to the new environment and balance these with inertial forces in the organization as routines to catch up.

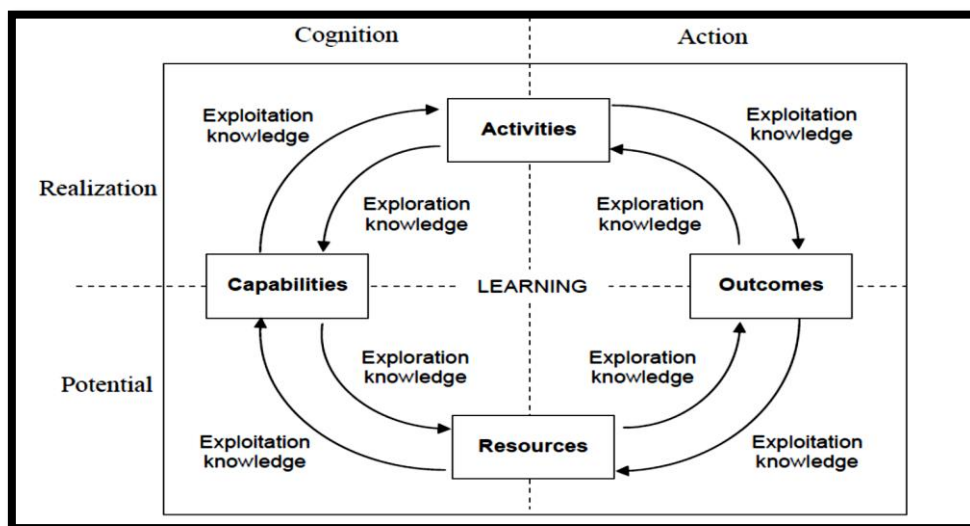
1.4. Organizational Learning and Organizational Change under the Pressure for Change

Organizational change always requires organizational learning which is important to increase organizational capabilities. Further, learning is not only differentiated by goal; that is, exploratory or exploitative but it is also differentiated by means; that is, direct, indirect and vicarious (Barnett and Hansen, 1998; Terlaak and Gong, 2008; Mitsuhashi, 2011; Greve, 2005; Levinthal and March, 1993; March 1991). In this study, we are trying to examine how organizational learning as an implicit process is inherent in the liability of renewal for established organization and in the liability of newness for new organization. Hernes and Irgens (2012) discussed organizational learning under continuity in a way that they thought that learning from past cases can be helpful in the present as well as an exploration of the future. Thus providing an intermediate ground between organizational change being successful and organizational change leading to catastrophic failure. Desai (2010), examined the moderating role of knowledge gained through an organization's operating experience as a way that an organization can learn from failure. Another study focused on learning from failure and indicated that this kind of learning is essential to adaptation. They argued that such learning complements learning from success, (Baum and Dahlin, 2007).

In addition to learning from failure, an organization can learn through other actions. A combination of exploitation and exploration learning which is called organizational capability-based learning can be seen in the study of Lejeune (2009). He argued that an integrative capability-based learning framework

help to understand organizational learning. Accordingly, organizational capabilities can be understood as one of the major sources of generating and developing a sustainable competitive advantage. Also organizational capabilities result from developments over time (Lejeune 2009). His framework aims to focus more on articulate learning dimensions such as (exploration and exploitation, cognition and action, context and process, single-loop and double-loop) as well as capabilities' components (resources, activities, outcomes) as can be seen in *figure 5* (Lejeune 2009).

Figure 5: A Capability-based Learning Integrative Framework



Source: Lejeune C., 2009

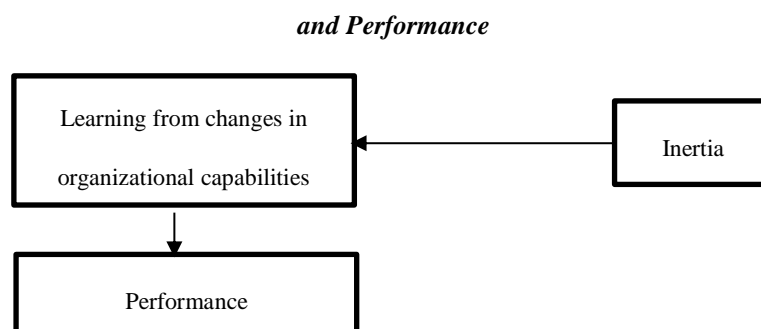
The argument by Hernes and Irgens (2012) which show that learning under continuity is equally important and requires more investment of effort, mindfulness and preparedness for change, even if there is no expected change. In Lejeune (2009) framework, and regarding our study, we expect that resources and capabilities can be the process of learning from changes in organizational capability either through

exploration or exploitation and that activities and outcome can be the indications of performance.

Although our study does not measure organization learning directly, we conclude that organizational capability-based learning is important as learning directly.

On the one hand, we assert that learning from changes in organizational capabilities have a positive effect on the performance. On the other hand the lag of changes in organizational capabilities can show a level of inertia. We assume that understanding changes in capabilities overtime as a learning process can help to improve and develop organizational performance. And that is the main focus of our study, which is how the organizational renewal process reflects on the balance between the dynamic aspect of organizational learning as demonstrated by changes in capabilities and the stabilizing aspects of organizational inertia. We summarized these aspects of our model in *figure 6*.

Figure 6: The Relationship between Inertia, Learning from Changes in Organizational Capabilities



2- Conceptual Model and Propositions

We have examined several research literatures that are important in building our conceptual model.

From these research literatures, we have identified the relevant variables, and general relationships among

the variables. We turn our attention to how these variables and their relationship are expressed in our model.

For the first proposition, we infer that structural inertia may decrease organizational capabilities. Hence, whenever an organization has high levels of structural inertia it will have a negative influence on changes in its organizational capabilities. From this, we also infer that changes in organizational capability reflect the dynamic influence of learning. This leads us to the first proposition:

Proposition 1: Inertia has a negative relationship with changes in organizational capabilities.

We argued that changes in organizational capabilities can be regarded as changes in organizational learning. We are assuming that the dynamic aspects of learning will generate changes in organizational capabilities and these will result in improvement in how organizations perform. Singh, Chan and McKeen (2006), built on the theory of knowledge management capability to indicate how an organization can improve performance. They found that organizations should pay attention to investing more in its knowledge processes to improve its performance. We assume that changes in organizational capabilities are a result of these knowledge processes and will lead to high performance. This leads to our second proposition:

Proposition 2: change in organizational capabilities has a positive relationship with changes in performance.

Legitimacy also can affect performance especially if certain organizational practices become normative, in that case legitimacy gains can become more important than performance improvements (Guo, 2012). Further the relationship between performance and legitimacy is affected by the type of environmental contingency or crisis such as the one suffered by SRO in 2005. In a study on crisis, Breitsohl (2009), found that “crises are indeed characterized by a loss in legitimacy, the specific dimensions depending on the type of crisis” (Breitsohl, 2009).

We assert that institutional change can have an impact on the legitimacy of an organization and that leads to a decrease in performance and vice versa. Here we assume that organizational legitimacy can be impactful on performance. This leads us to our third proposition:

Proposition 3: Legitimacy has a positive relationship with changes in performance.

Following the notion of “for each action there is an equal and opposite reaction”, we believe that decreasing an organization’s performance which causes loss of organizational legitimacy will lead to an increase in pressure for change. Environmental change for a state-owned company is reflected in changes in legitimacy as expressed by its major stakeholders, the government. The loss in legitimacy from an organization’s stakeholders increases the likelihood of pressure for change. We assume that an organization decreased performance and losses in legitimacy leads to pressure for change. This leads us to our fourth and fifth proposition:

Proposition 4: changes in performance have a negative relationship with changes in pressure for change.

Proposition 5: changes in legitimacy have a negative relationship with changes in pressure for change.

A key element which links the liability of newness with the liability of renewal is the extent to which organizations can learn or more precisely how established organizations can re-learn. Here, one aspect of the links between the liability of newness and the liability of renewal is that an old organization seeks to learn from failure. As we assume, in propositions 4 and 5, that loss of legitimacy and decrease of performance lead to pressure for change, we also assume that pressure for change has a positive impact on changes in organization capability. This leads us to sixth proposition:

Proposition 6: Pressure for change has a positive relationship with Organizational learning.

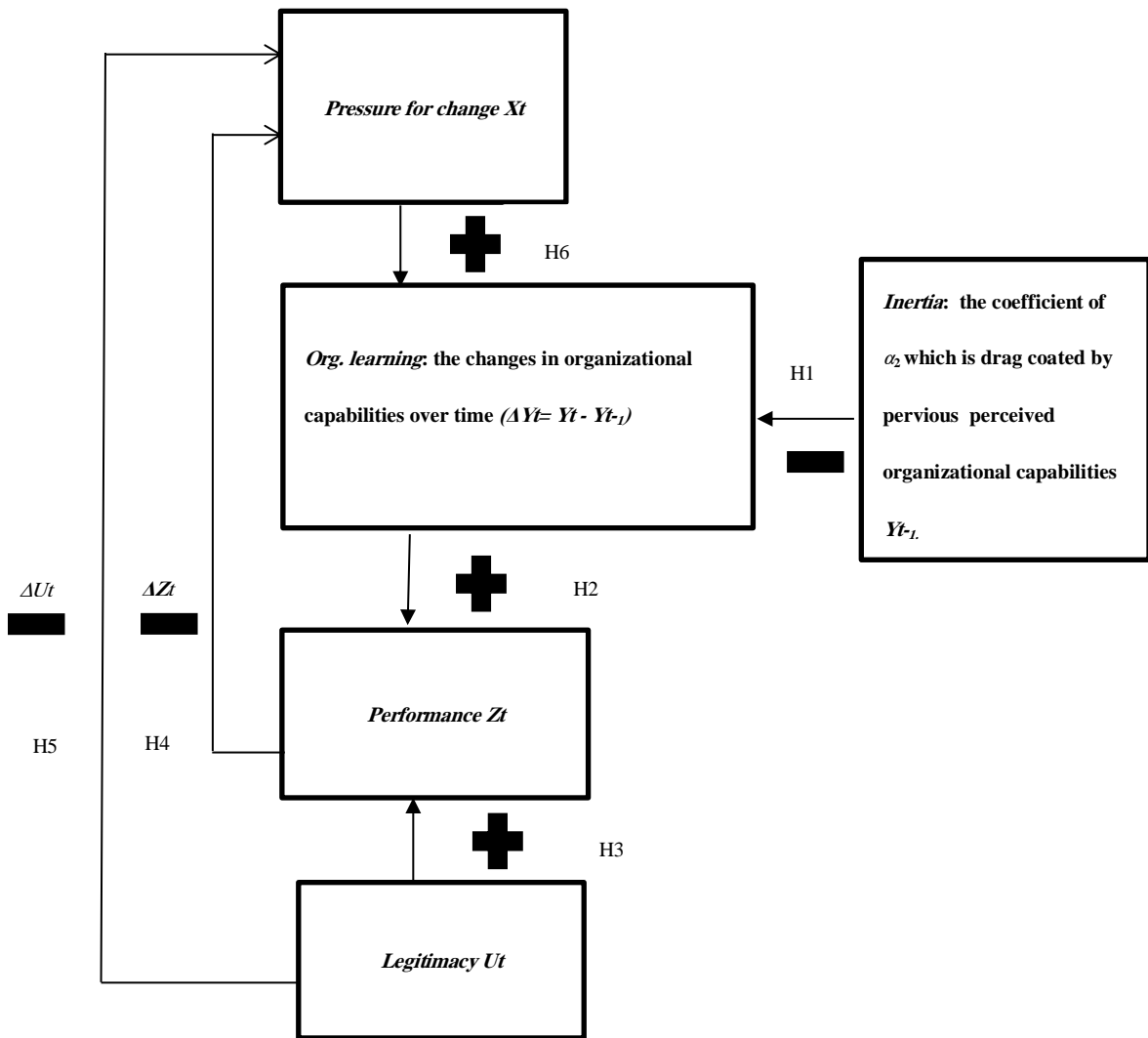
We have examined several research literatures that are important in building our conceptual model. We have identified the relevant variables that followed from each of the research literatures in terms of the relationships among the variables.

The components of our model shown in *figures 4 and 6* and the propositions offered above are shown in our complete model in *figure 7*. Our conceptual model shows that the organizational capabilities can be a source of errors in performance as well as source of legitimacies towards performance.

Our conceptual model also shows the process of how organizations whether in a state of renewal or newness are expected to improve the performance by enhancing organizational capabilities. Further, our

model emphasizes the learning process by changes in organizational capabilities as a way to increase both organizations to perform well and re/gain legitimacy.

Figure 7: The Conceptual Model



Chapter 3

1- Methodology and Analysis Development

- Introduction:

Here we decide the equations and variables we use in our study. First we will explain our variables and then we turn our attention to our equations. In this study, we examine our variables for both organizations SRO and SAR separately by using the difference equation regression. We also expect that the new entrant SAR creates an environmental (institutional) turbulence or change that has an impact on the existing organization SRO. So we examine SRO before and after SAR's entrance into the Saudi Railway sector. Variables in Equation

In this study we choose relevant variables as can be seen in the *Table 4*. We explain the relationships among the variables and our measures and the reason for choosing these measures. We discuss these as follows:

First: *Organizational capabilities denoted as Y*. We are examining core capabilities of the organization. These core capabilities as represented by the *Y* variable are measured in terms of number of wagons for freight, number of freight and passenger trips, total number of freight cars, number of passenger cars and staff. This is in keeping with the study of Gilbert (2005). We should note that in this study the number of passenger cars remains the same over the time series and then the number jumps from 75 cars to 115 cars in 2012. This may have an impact on our results.

Second: *Performance denoted as Z*. This variable is measured by the number of passengers, number of containers, Tons of freight, freight revenue and passenger revenue. We decided these measures based on railway's industry common performance measures during the suggested period of time.

Third: *Pressure for change denoted as X*. This variable is measured by percent of yearly achieved goals, passenger expenses, Freight expenses, ratio of freight train accidents and ratio of passenger train accidents.

Fourth: *Legitimacy denoted as U*. This variable is measured by the budget paid by the Saudi government. In measuring all the above variables, we denoted time series as (t) , and the time lags as $(t-1)$.

2- Difference Equation Model

It was suggested that in order to test our model and propositions, this study applies a differences equation approach. We test these propositions using a time series from 2001-2014 for SRO and 2011-2014 for SAR to understand the relationships among organizational inertia, organizational capability, legitimacy, performance and pressure for change. We tend to examine SRO per and post SAR entry. The model is summarized by equations 1 through 3, to which we apply regression analysis.

Equation 1: $\Delta Y_t = \alpha_0 + \alpha_1 X_t + \alpha_2 Y_{t-1} + \varepsilon_t$.

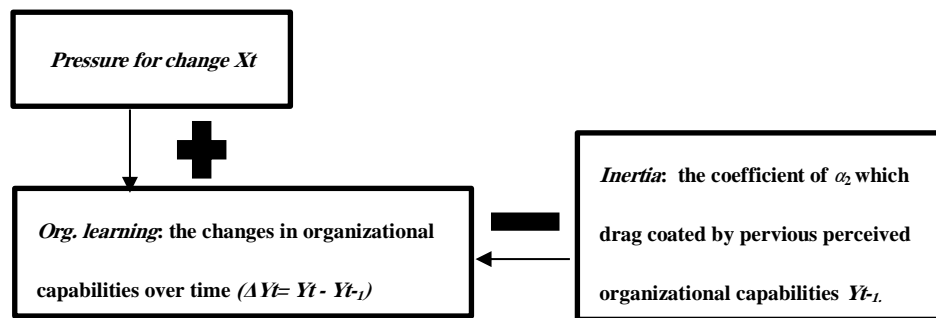
Where: $\alpha_2 Y_{t-1}$ = *Organizational capability lagged one year as our indicator of inertia.*

$\Delta Y_t = Y_t - Y_{t-1}$ = *Changes in organizational capability as indicator of organizational learning.*

X_t = *Pressure for change.*

Our first equation aims to test the relationship on learning for propositions 1 and 6. In this equation we denote changes in organizational capabilities as learning as ΔY as the dependent variable and lags in organizational capability as organizational inertia as the coefficient α_2 of Y_{t-1} and the pressure for change X_t as the independent variables as can be seen in *figure 8*. This equation was recommended by Preece (1984) in his paper, which called for the use of mathematical modeling for the understanding of learning. From this equation we expect to show the organizational inertia level by using the regression coefficient of the lagged capability variables. A negative coefficient indicates negative learning, that is, inertia in the organization in that it has a damping effects on the organizational capabilities. Organizational learning is indicated in our model by changes in organizational capabilities, ΔY_t .

Figure 8: The Relationships Measured by Equation 1



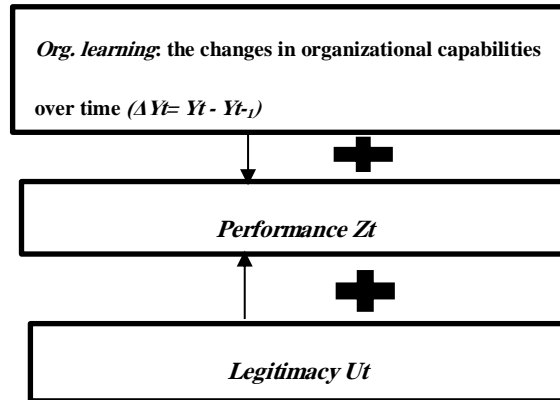
Equation 2: $\Delta Z_t = b_0 + b_1 \Delta Y_t + b_2 U_t + \epsilon_t$.

Where: $\Delta Z_t = Z_t - Z_{t-1} = \text{Changes in organization performance.}$

$U_t = \text{Legitimacy.}$

The second equation measures the relationship between changes in organization performance ΔZ_t with changes in learning ΔY_t and legitimacy U_t . This equation aims to test propositions 2 and 3 as can be seen in *figure 9*.

Figure 9: The Relationships Measured by Equation 2



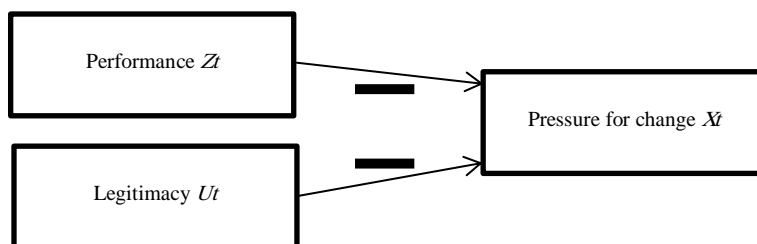
Equation 3: $\Delta X_t = c_0 + c_1 \Delta Z_t + c_2 \Delta U_t + \epsilon_t$.

Where: $\Delta X_t = X_t - X_{t-1} = \text{Changes in pressure for change.}$

$\Delta U_t = U_t - U_{t-1} = \text{Changes in legitimacy.}$

The third equation measures the relationship between the changes in pressure for change ΔX_t by measuring changes in organization performance ΔZ_t and changes in legitimacy ΔU_t . This equation tests propositions 4 and 5 as can be seen in *figure 10*.

Figure 10: The Relationships Measured by Equation 3



In all equations we test our propositions through regression analysis for each dependent variable with only two independent variables. In the equations we test each equation separately and not simultaneously. This was because the numbers of variables are large, but observations per variable are kind of small (13 years) for SRO and (3 years) for SAR. If we put all relevant variables in a single equation, all the parameters could not be measured simultaneously. Thus, we chose to test each dependent variable against the two independent variables separately. For example, in order to evaluate the first equation, we run regression analysis for each organizational capability measure separately against lags of pressure for change and organizational capability measures.

To examine SRO and since it is state owned organization, we got a permission from the previous Saudi Minister of Transport Gebara Bin Eid to collect all the data needed in this paper. So we collected all the data from SRO directly. Also to examine SAR we got permission from the CEO Dr. Romih Alromih. And these data collection activities are detailed in *appendices 1- 7*.

3- The Time Variation for SRO / Pre-SAR and Post-SAR Entry

We think that the time variation plays a big role in which we measure SRO passenger and freight operation between 2001-2005 as pre-SAR entry and 2006-2014. These will allow us to show the consequences of the environmental changes in the Saudi railway sector.

By emphasizing the time variation, we want to make sure, how the organizational renewal process reflects on the balance between the dynamic aspect of organizational learning as demonstrated by changes in capabilities and the stabilizing aspects of organizational inertia, before and after SAR entry. For this section of the result we use the same equations.

Table 4: The Relationships among Variables and our Measures

Variable codes	Variable names	Conceptual definition of variables	Operationalization (measurement definition) of variables	Why these measures are used for each variable	
Y	N.W.F	Yearly No. of wagons of freight at SRO and SAR	Organizational capability related to operating freight.	No. of freight wagons per single trip *No. of total freight trips per year	This measure is related to the core capability of the amount of transported freight.
	N.F.T	Yearly No. of freight trips at SRO and SAR	Organizational capability related to operating freight.	No. of total trips per year/ No. of freight wagons per single train	This measure is related to the core capability of transported No. of wagons.
	N.P.T	Yearly No. of Passenger trips	Organizational capability related to operating passenger	Reserved No of passenger trips	This measure is related to the core capability.
	N.F.C	Total No. of freight cars in each year at SRO and SAR	Organizational capability related to add cars to the freight operation.	Added No. of freight cars in each year	Adding more cars increases the core capability of freight operation.
	N.PC	No. of passenger cars in each year	Organizational capability related to add cars to the passenger operation.	Added No. of passenger cars in each year	Adding more cars increases the core capability of passenger operation.
	S	Staff at SRO and SAR	Organizational capability related to add No. of staff to both freight and passenger operation.	Added No. of staff in each year.	Adding more staff increases core organizational capability to handle freight and passenger operation.
Z	P	Passenger	Organization performance related to passenger operation.	Registered No. of passengers in each year.	In the railway system the No. of passengers is related to passenger operation performance.
	C	Container	Organization performance related to freight operation.	Registered No. of containers in each year.	In the railway system the No. of containers and tons of freight are related to freight operation performance.
	T.F	Tons of freight at SRO and SAR	Organization performance related to freight operation.	Registered tons of freight in each year.	
	P.R	Revenue of passenger operation	Organization performance related to passenger operation.	Registered passenger revenue for operation in each year from the financial statement of SRO.	Both freight and passenger operations' revenues are related to the performance outcome. We use these measures to evaluate organization performance.
	F.R	Revenue of Freight operation at SRO and SAR	Organization performance related to freight operation.	Registered freight revenue for operation in each year from the financial statement of SRO.	
X	% Ach G	Percentage of achieved goal each year at SRO and SAR	Pressure for change	% of achieved goal from the financial statement of SRO in each year.	We find this measure as pressure for change, we think that if the organization couldn't achieve its goals in a year it will be forced to improve to achieve it in other year.
	F.EX	Expenses of freight operation at SRO and SAR	Pressure for change	Registered freight expenses for operation in each year from the financial statement of SRO	Since SRO is a state-owned company, both expenses paid by the government can be related to pressure for change. For SAR which is a private investment shared between government and other investors
	P.EX	Expenses of passenger operation	Pressure for change	Registered passenger expenses for operation in each year from the financial statement of SRO.	
	R. F.Ac	Ratio of freight accidents at SRO and SAR	Pressure for change	No. of total freight trips per year/% of total accident per year	This is a measure of pressure for change since any increase in accidents will increase pressure to improve.
	R. P.Ac	Ratio of passenger accidents	Pressure for change	No. of total passenger trips per year/% of total accident per year	
U	Bud	Budget paid by the government and investors for each company SRO & SAR	Legitimacy	The amount of money paid by the government year from the yearly financial statement of SRO	Since SRO is a state-owned company its major stakeholders is the government. Budget is a payment, which can be regarded as a source of legitimacy,

Chapter 4

1- Results

- Introduction

In this section, we first examine the propositions for SAR from 2011-2014 using the equations described earlier and then we do the same examination with the same equations for SRO from 2001-2014. In both examinations we will examine the propositions using the differences variable regression. For the last part of the result we use the same equations to measure SRO activities during the pre-SAR entry from 2001-2005 and post-SAR entry from 2006-2014. At the end of this chapter we turn our attention to our discussion of this study.

Table 5 shows the result for proposition 1 and 6 for SAR which includes the relationship between changes in organizational capabilities as an indicator of learning with ΔY as the dependent variable and the lag of organizational capability as α_2 the coefficient of Y_{t-1} and the pressure for change X_t as the independent variables. As we noted in our model α_2 the coefficient of Y_{t-1} is an indicator for organizational inertia. In this table, the results of the regression analysis are displayed. The study did not find a significant (<0.1 or <0.5) relationship but positive relationships were found between changes in learning and pressure for change which supports proposition 6. Although we do not have significant result the positive coefficients are as expected and thus indicate that pressure for change can have a positive effect on organizational learning.

Looking at *Table 5* in more detail, we found that the measure for pressure for change has a positive effect on the change in organizational capability. But we also found a negative but not significant

relationship between the percentage of achieved goals as a measure of pressure for change with the number of freight cars and staff as an indicator of changes in organizational capabilities. And we also found a negative relationship between freight expenses as a measure for pressure for change with the number of wagon for freight. Finally, we found that the ratio of freight accidents as indicator of pressure for change has a negative effect on the number of freight cars. All these negative results do not support proposition 6. Overall, however the other results are in the hypothesized direction and thus we found that pressure for change increases the likelihood to learn as indicated by changes in capability.

A_2 the coefficient of the Lag in organizational capabilities Y_{t-1} is our measure of organizational inertia and shows some negative as well as positive relationships with learning from changes in capabilities ΔY . This is not in the expected direction and shows support for proposition 1, which states that inertia, has a negative effect on organizational learning. We found an equal number of negative and positive coefficients. Thus we found some organizational inertia, that overall, we found inertia has an indeterminate effect on organizational learning which does not support proposition 1. We discuss some possible explanations for these results in our discussion section.

Table 5: The Saudi Railway Company SAR, the Result of Equation 1

X_t, Y_{t-1}

	+	-	+	-	+	-
ΔY_t	% <i>Achi</i>	Y_{t-1}	<i>F.Ex</i>	Y_{t-1}	<i>R.F.Acc</i>	Y_{t-1}
<i>N.W.F</i>	.368	.823	-.841	1.701	.360	.854
<i>N.F.T</i>	.641	-.564	2.265	-2.989	.666	-.505
<i>N.F.C</i>	-1.202	.333	1.120	-1.210	-1.117	.206
<i>S</i>	-.573	1.086	1.023	-.027	1.036	-.555

** indicate sg at 0.05, * indicate sg at 0.1

Table 6, shows the result for proposition 1 and 6 for SRO which includes the relationship between changes in organizational capabilities as an indicator of learning using ΔY_t as the dependent variable regressed on the lag of organizational capability as α_2 the coefficient of Y_{t-1} and the pressure for change X_t as the independent variables.

In table 6, the results of the regression analysis are displayed. The study found a significant (<0.1 or <0.5) and positive relationship between changes in learning and pressure for change which supports proposition 6. This indicates that pressure for change has a positive effect on organizational learning.

Table 6: The Saudi Railway Organization SRO, the Result of Equation 1

X_t, Y_{t-1}

	+	-	+	-	+	-	+	-	+	-
ΔY_t	%Achi	Y _{t-1}	F.Ex	Y _{t-1}	P. Ex	Y _{t-1}	R.F.acc	Y _{t-1}	R.P.acc	Y _{t-1}
N.W.F	.071	-.377	.300	-.367	.018	-.329	.443	-.458	.397	-.352
N.F.T	-.679**	-.256	.139	-.213	.647**	-.503*	-.594	-.586	.127	-.288
N.P.T	-.045	-.194	-.044	-.203	.352	-.248	.180	-.263	.309	-.311
N.F.C	.517*	-.138	-.610	-.565	-.339	-.200	-.304	-.180	-.455	-.154
N.P.C	.026	-.150	-.428	-.280	.199	-.199	-.228	-.031	-.487	.103
S	.358	-.498	-.372	-.638	-.346	-.601	-.061	-.400	.048	-.391

** indicate sg at 0.05, * indicate sg at 0.1

By looking at Table 6 in more detail, we found that the measure for pressure for change as indicated by percentage of achieved goals has a positive and significant effect on the change in organizational capability as measured by the change in the numbers of freight cars. We also found that the passenger expenses as a measure of pressure for change positively and significantly affects the change in organizational capability as measured by the change in the number of freight trips. We also found a negative and significant relationship between the percentage of archived goals and the number of freight trips which does not support proposition 6. Overall, we found that pressure for change increases the likelihood to learn as indicated by changes in capability.

A_2 the coefficient of the lag in organizational capabilities Y_{t-1} is our measure of organizational inertia and shows a negative and significant relationship with learning from changes in capabilities ΔY . This is in the expected direction and shows support for proposition 1, which states that inertia, has a negative effect on organizational learning. We found that the lag in organizational capabilities in terms of passenger expenses has a significant negative relationship with the number of freight trips. We also found most of the measures of organizational inertia were negative although not significant. Since the negative signs are in the hypothesized direction, for an exploratory study such as ours, we feel this supports proposition 1, overall. We summarize that since SRO did show lags in the changes in its capabilities, SRO seems to have structural inertia. Overall, we found that Inertia has a negative relationship with changes in Organizational capability, which is an important component, contributing to liability of renewal.

Table 7: The Saudi Railway Company SAR, the Result of Equation 2

$\Delta Y_t, U_t$

	+	+	+	+	+	+	+	+
ΔZ_t	N.W.F	Bud	N.F.T	Bud	N.F.C	Bud	S	Bud
T.F	2.183	-1.878	1.064	.433	-.999	.110	-3.107	3.005
F.R	1.512	-2.067	.737	-.467	-.692	-.690	-2.152	1.315

** indicate sg at 0.05, * indicate sg at 0.1

Table 7, includes the relationship between changes in organization performance ΔZ_t by changes in learning ΔY_t and legitimacy U_t at SAR. In this table, the results of the regression analysis are displayed. This study found some positive relationships between changes in organization performance and changes in organizational capabilities and this result supports proposition 2, which states that organizational

learning as understood by changes in organizational capabilities has a positive relationship with changes in performance.

In looking at *Table 7* in more detail, we found that an increase in learning from changes in capabilities has a positive and significant relationship with the performance variable. We found some negative but not significant relationships, so overall we found that changes in organization capabilities, as an indication of the dynamics of organizational learning is indeterminate with support to changes in performance.

The result in *Table 7* also is indeterminate for proposition 3, which states that legitimacy has a positive relationship with changes in performance. So overall, we conclude that legitimacy has an indeterminate relationship with changes in performance.

Table 8: The Saudi Railway Organization SRO, the Result of Equation 2

$$\Delta Y_t, U_t$$

	+	+	+	+	+	+	+	+	+	+	+	+
ΔZ_t	N.W.F	Bud	N.F.T	Bud	N.P.T	Bud	N.F.C	Bud	N.P.C	Bud	S	Bud
P	.415	-.183	-.099	-.181	-.154	-.147	.236	-.271	.224	-.248	-.104	-.126
C	.472	.148	.438	.176	-.005	.157	.490	-.041	.045	.141	.362	-.018
TF	-.120	.268	.661**	.296	-.547*	.369	-.447	.446	.240	.189	-.460	.487
P.R	.149	-.093	.032	-.088	.184	-.124	-.449	.091	-.730**	.145	-.034	-.073
F.R	.376	-.012	-.417	-.283	.117	-.285	-.372	-.114	-.77**	-.016	.083	-.303

** indicate sg at 0.05, * indicate sg at 0.1

Also for SRO we examine the second equation in *table 8*, which includes the relationship between changes in organization performance ΔZ_t by changes in learning ΔY_t and legitimacy U_t .

In *table 8*, the results of the regression analysis are displayed. We found a significant (<0.1or <0.5) and positive relationship between changes in organization capabilities and changes in organizational performance and this result supports proposition 2, which states that organizational learning as

understood by changes in organizational capabilities has a positive relationship with changes in performance. In more detail, we found that increases in learning from changes in capabilities in terms of changes in the number of freight trips has a positive and significant relationship with the performance variable as measured by changes in the tons of freight.

We also found a negative and significant relationship between the changes in organizational learning as measured by number of passenger trips and tons of freight as an indicator of performance. This result shows that there is a difference between both operations of freight and passenger, since both operations will use common resources, such as track and signal system, which may result in a tradeoff between freight and passenger operations. Also we found a negative and significant relationship between the changes in organizational learning measured by passenger cars with the passenger and freight revenue. All these negative relations do not support proposition 2. We discuss possible explanations for these results in our discussion section. However, overall we conclude that organizational capabilities have a positive relationship with changes in the organizational performance.

The result in *Table 8* weakly supports proposition 3, which states that legitimacy has a positive relationship with changes in performance. So overall, we conclude that legitimacy has a positive relationship with changes in performance.

Table 9: The Saudi Railway Company SAR, the Result of Equation 3

$\Delta Z_t, \Delta U_t$

	-	-	-	-
ΔX_t	<i>T.F</i>	<i>Bud</i>	<i>F.R</i>	<i>Bud</i>
<i>% Achi</i>	.911	.127	.684	.830
<i>F.Ex</i>	-.533	-.562	-.400	-.973
<i>R.F.Acc</i>	1.139	-.229	.855	.650

** indicate sg at 0.05, * indicate sg at 0.1

Table 9, includes the relationship between the changes in pressure for change ΔX_t with changes in organization performance ΔZ_t and changes in legitimacy ΔU_t at SAR. Our study found negative relationships between the changes in pressure for change with changes in organization performance. This supports proposition 4, which states changes in performance has a negative relationship with changes in pressure for change. Although we found some positive relations which does not support proposition 4, we can conclude that overall, we found weakly support that change in performance has a negative relationship with pressure for change. Again, we will address some potential explanations for our result later.

Our results as reported in *Table 9* also support proposition 5, which states that changes in legitimacy has a negative relationship with changes in pressure for change. Changes in legitimacy, (the budget paid by the government), has a negative but not significant relationship with changes in pressure for change as a measured by freight expenses and the ratio of freight accidents. We found an equal number of positive and negative relationships which do not support proposition 5. Overall, we found that our results are indeterminate for proposition 5.

Table 10 includes the relationship between the changes in pressure for change ΔX_t with changes in organization performance ΔZ_t and changes in legitimacy ΔU_t at SRO. Our study found a significant (<0.1 or <0.5) and negative relationship between the changes in pressure for change with changes in organization performance. This supports proposition 4, which states that changes in performance has a negative relationship with changes in pressure for change.

Table 10: The Saudi Railway Organization SRO, the Result of Equation 3

$\Delta Z_t, \Delta U_t$

	-	-	-	-	-	-	-	-	-	-
ΔX_t	P	Bud	C	Bud	TF	Bud	FR	Bud	PR	Bud
%Ach	.142	-.100	-.245	-.151	-.536*	-.090	.489	-.407	.284	-.164
F.EX	.246	.332	.032	.353	-.236	.346	.958**	-.270	-.500*	.471
P.EX	-.086	-.006	-.120	-.039	.369	-.012	-.044	.018	-.034	.009
R.F.Ac	-.154	-.084	.202	-.030	.341	-.094	-.067	-.049	.994**	-.048**
R.P.Ac	-.204	.139	.157	.166	-.114	.129	-.039	.153	1.014**	-.439*

** indicate sg at 0.05, * indicate sg at 0.1

In examining *Table 10* in more detail, we found that changes in performance as measured by changes in the tons of freight has a negative and significant relationship with changes in pressure for change as measured by changes in the percentage of archived goals. We also found that changes in performance as measured by the passenger revenue have a negative and significant relationship with the change in pressure for change as measured by the freight expenses.

A significant but positive relationship can be seen between the changes in performance measured by the changes of freight revenue with the changes in pressure for change as measured by freight expenses. This may be related to the accounting point of view that whenever revenue increases expenses also increases. We also see this with the positive but insignificant relationship between changes in passenger revenue with change in pressure for change as measured by the ratios of both passenger and freight accidents. These relationships do not support proposition 4. Overall, however we found that change in performance has a negative relationship with pressure for change.

Our results as reported in *Table 10* also support proposition 5, which states that changes in legitimacy has a negative relationship with changes in pressure for change. We found that changes in legitimacy as measured by changes in the budget has a negative and significant relationship with the

changes in pressure for change as measured by the ratios of both Freight and passenger accidents. Again as exploratory study, we feel this sign is in the predicted direction and shows support for proposition 5.

- **Pre-SAR Entry Analysis**

In the following tables we show the results for SRO operations from 2001- 2005 which is the period of pre-SAR entry.

Table 11: SRO 2001-2005, the Period of Pre-SAR Entry Equation 1

X_t, Y_{t-1}

	+	-	+	-	+	-	+	-	+	-
ΔY_t	%Achi	Y_{t-1}	F.Ex	Y_{t-1}	P. Ex	Y_{t-1}	R.F.acc	Y_{t-1}	R.P.acc	Y_{t-1}
N.W.F	-.912	-.058	.380	-.974	.306	-.945	.437	-.789	.335	-.749
N.F.T	-.380	.155	1.147	-.772	1.235	-.939	.863	-.281	.719	-.350
N.P.T	.312	-.778	-1.865*	-1.746**	-1.254**	-2.155**	-.406	-1.216*	-.318	-1.164
N.F.C	-1.029	-.097	-1.356*	1.375*	-1.261	1.229**	-3.853	4.122	-1.332	1.580
N.P.C	.014	-.528	-17.714	17.173	4.308	-4.805	.129	-.637	.873	-1.248
S	.549	.899	1.548	2.343	2.872	3.636	-1.381	-.450	-.713	.180

** indicate sg at 0.05, * indicate sg at 0.1

Table 11, shows the result for proposition 1 and 6 for SRO for the period of pre-SAR entry, which includes the relationship between changes in organizational capabilities as an indicator of learning with ΔY as the dependent variable when regressed on the α_2 the coefficient of the lag of organizational capability using Y_{t-1} and the pressure for change X_t as the independent variables. As we noted in our model α_2 the coefficient of Y_{t-1} is an indicator for organizational inertia. In this table, the results of regression analysis are displayed. The study found a positive relationship between changes in learning and pressure for change which supports proposition 6. This indicates that pressure for change has a positive effect on organizational learning.

By looking at *Table 11* in more detail, we found that some measures for pressure for change have a positive but not significant effect on the change in organizational capability. We conclude that, there is a positive relationship between changes in organizational capabilities as an indicator of learning using ΔY as the dependent variable when regressed on the lag of organizational capability as Y_{t-1} and the pressure for change X_t as the independent variables.

We also found a negative and significant relationship between the freight expenses and the number of passenger trips and the number of the freight cars which does not support proposition 6. The passenger expenses at SRO as a measure of pressure for change has a negative and significant effect on the number of passenger trips as an indicator of changes in organizational capabilities. Overall, we found that pressure for change increases the likelihood to learn as indicated by changes in capability.

A_2 the coefficient of the lag in organizational capabilities Y_{t-1} is our measure of organizational inertia and shows a negative and significant relationship with learning from changes in capabilities ΔY . This is in the expected direction and shows support for proposition 1, which states that inertia, has a negative effect on organizational learning.

On the one hand, we found that the Lag in organizational capabilities Y_{t-1} as an indicator of organizational inertia as measured by freight expenses has a negative and significant relationship with the number of passenger trips as a measure of changes in organizational capabilities. We also found that the lag in organizational capabilities Y_{t-1} as our indicator of organizational inertia as measured by passenger expenses has a negative and significant relationship with the number of passenger trips as a measure of changes in organizational capabilities. Also we found that, the Lag in organizational capabilities Y_{t-1} as

our indicator of organizational inertia as measured by the ratio of freight accident has a negative and significant relationship with the number of passenger trips as a measure of changes in organizational capabilities.

On the other hand, we found that the lag in organizational capabilities Y_{t-1} as our indicator of organizational inertia as measured by freight and passenger expenses have a positive and significant relationship with the number of freight cars as a measure of changes in organizational capabilities. This finding does not support proposition 1, however, the other results showed negative effects which support proposition 1.

Table 12: SRO 2001-2005 the Period of Pre-SAR Entry Equation 2

$$\Delta Y_t, U_t$$

	+	+	+	+	+	+	+	+	+	+	+	+
ΔZ_t	N.W.F	Bud	N.F.T	Bud	N.P.T	Bud	N.F.C	Bud	N.P.C	Bud	S	Bud
P	1.050	-.220	.426	.283	-.786	.709	-.263	.523	.836	.223	-.075	-.075
C	1.354**	1.368**	-.246	-.225	-.924	-.188	.276	-.351	.981	-.758	.473	.044
TF	.343	.646	.436	.626	-.291	.956	-.315	.887	.310	.777	-.739	.237
P.R	-.587	1.255	.571	.471	.348	.754	-.479	.780	-.368	.968	-1.006	-.072
F.R	-.779	1.342	.530	.443	.488	.672	-.459	.729	-.517	.973	-.942	-.067

** indicate sg at 0.05, * indicate sg at 0.1

Table 12, includes the relationship between changes in organization performance ΔZ_t by changes in learning ΔY_t and legitimacy U_t for SRO for the period of per-SAR entry. In this table, the results of the regression analysis are displayed. This study found a significant (<0.1 or <0.5) and positive relationship between changes in organization performance and changes in organizational capabilities and this result weakly supports proposition 2, which states that organizational learning as understood by changes in organizational capabilities has a positive relationship with changes in performance.

In more details, we found that increases in learning from changes in capabilities as measured in terms of changes in number of wagons for freight has a positive and significant relationship with the performance variable as measured by changes in the number of containers. This result supports proposition 2.

For proposition 3 we found that legitimacy as measured by the budget of SRO has a positive relationship with performance as measured by the number of containers. This finding supports proposition 3.

We also found a negative and not significant relationship between learning from changes in organizational capabilities and legitimacy with performance. All these negative relationships do not support proposition 2 and 3. However, overall we conclude that learning from changes in organizational capabilities and legitimacy has a positive relationship with performance.

Table 13: SRO 2001-2005 the Period of Pre-SAR Entry Equation 3

$\Delta Zt, \Delta Ut$

	-	-	-	-	-	-	-	-	-	-
ΔXt	P	Bud	C	Bud	TF	Bud	FR	Bud	PR	Bud
%Ach	-.420	-.552	-.778*	-.467	.046	-.651	.460	-.615	.546	-.590
F.EX	-.426	.094	-.870	-.031	.660	-.385	.971*	-.137	.940	-.175
P.EX	-.109	-.192	-.958	-.002	.494	-.334	.928	-.139	.870	-.167
R.F.Ac	.638	.295	.992	-.180	-.505	-.282	.882	.210	.938	.180
R.P.Ac	-.501	.498	-.932*	.600	.058	.379	.656	.454	.552	.424

** indicate sg at 0.05, * indicate sg at 0.1

Table 13 includes the relationship between the changes in pressure for change ΔXt with changes in organization performance ΔZt and changes in legitimacy ΔUt . Our study found a significant (<0.1 or <0.5) and negative relationship between the changes in pressure for change with changes in organization performance. This weakly supports proposition 4, which states that changes in performance has a negative relationship with changes in pressure for change.

In examining *Table 13* in more detail, we found that changes in performance as measured by changes in the number of containers has a negative and significant relationship with changes in pressure for change as measured by changes in the percentage of archived goals and the ratio of passenger accidents. These findings weakly support proposition 4.

A significant but positive relationship can be seen between the changes in performance as measured by the changes of freight revenue with the changes in pressure for change as measured by freight expenses. This may be related to the accounting point of view that whenever revenue increases expenses also increases. This relationship does not support proposition 4. Overall, however we found that changes in performance have a negative relationship with pressure for change.

Our results as reported in *Table 13* support proposition 5, which states that changes in legitimacy has a negative relationship with changes in pressure for change. We found that changes in legitimacy as measured by changes in the budget have a negative but not significant relationship with the changes in pressure for change. Again as exploratory study, we feel this sign is in the predicted direction shows support for proposition 5.

- **Post-SAR Entry 2006-2014**

In the following tables we show the results of SRO operations from 2006- 2014 which is the period of post-SAR entry.

Table 14: SRO 2006-2014 the Period of Post-SAR Entry Equation 1

X_t, Y_{t-1}

	+	-	+	-	+	-	+	-	+	-
ΔY_t	%Achi	Y_{t-1}	F.Ex	Y_{t-1}	P. Ex	Y_{t-1}	R.F.acc	Y_{t-1}	R.P.acc	Y_{t-1}
N.W.F	-.310	-.654*	.229	-.644*	-.293	-.730*	.604	-.324	.350	-.429
N.F.T	-.537	-.134	-.640	-.764	.076	-.227	-.275	-.251	-.735**	-.290
N.P.T	.100	.398	.532	.842	.567	.656	-.217	.407	.064	.425
N.F.C	-.534	.211	-.695	-.575	.119	.052	-.172	-.014	-.575	.009
N.P.C	.042	-.229	-1.201**	-1.181**	.739	.232	-.678*	-.091	-.785**	-.006
S	.239	-.302	-.154	-.375	-.298	-.334	.015	-.252	.104	-.214

** indicate sg at 0.05, * indicate sg at 0.1

Table 14, shows the result for proposition 1 and 6 for SRO for the period of post-SAR entry, which includes the relationship between changes in organizational capabilities as an indicator of learning using ΔY as the dependent variable when regressed on the lag of organizational capability using Y_{t-1} and the pressure for change X_t as the independent variables. As we noted in our model, α_2 the coefficient of Y_{t-1} is an indicator for organizational inertia. In this table, the results of regression analysis are displayed. The study found positive but not significant relationships between learning from changes in organizational capability with pressure for change which weakly supports proposition 6. We conclude that pressure for change has a positive effect on organizational learning.

Also we found negative and significant relationships between learning from changes in organizational capability and pressure for change which does not supports proposition 6. We found a negative and significant relationship between the freight expenses and the number of passenger cars which does not support proposition 6. The ratio of freight accident at SRO which measures the pressure

for change has negative and significant effect on the number passenger cars as a measure of learning from changes in organizational capabilities. We also found that, the ratio of passenger accident as a measure of pressure for change has a negative and significant relationship with number of freight trips and the number of passenger cars. Overall, however we found that pressure for change increases the likelihood to learn as indicated by changes in capability.

A_2 the coefficient of Lag in organizational capabilities Y_{t-1} is our measure of organizational inertia and shows a negative and significant relationship with learning from changes in capabilities ΔY . This is in the expected direction and shows support for proposition 1, which states that inertia, has a negative effect on organizational learning. We found that the Lag in organizational capabilities Y_{t-1} as our indicator of organizational inertia as measured by percentage of achieved goals has a negative and significant relationship with the number of wagons of freight as a measure of changes in organizational capabilities. We also found that the Lag in organizational capabilities Y_{t-1} as an indicator of organizational inertia by freight expenses has a negative and significant relationship with the number of wagons for freight and the number of passenger cars as measures of changes in organizational capabilities.

We found that the Lag in organizational capabilities Y_{t-1} as our indicator of organizational inertia has a positive but not significant relationship with changes in organizational capabilities. These findings do not support proposition 1, however, the other results showed the predicted negative effects which support proposition 1.

Table 15: SRO 2006-2014 the Period of Post-SAR Entry Equation 2

$\Delta Y_t, U_t$

	+	+	+	+	+	+	+	+	+	+	+	+
ΔZ_t	N.W.F	Bud	N.F.T	Bud	N.P.T	Bud	N.F.C	Bud	N.P.C	Bud	S	Bud
P	.301	.406	-.366	.260	-.516	.358	-.326	.361	-.516	.358	.227	.232
C	.560	.040	.643	-.177	.043	-.213	.806**	-.417	.111	-.222	.363	-.273
TF	-.608	-.217	.515	.070	-.889**	.236	.106	.021	.366	-.010	-.252	.096
P.R	.636	.573	-.372	.280	.106	.273	-.324	.381	-.818**	.427	.084	.280
F.R	.415	.050	-.744*	-.178	.026	-.152	-.727*	.045	-.900**	-.003	.078	-.162

** indicate sg at 0.05, * indicate sg at 0.1

Table 15, includes the relationship between changes in organization performance ΔZ_t regressed on learning from changes in in organizational capability ΔY_t and legitimacy U_t for SRO for the period of post-SAR entry. In this table, the results of the regression analysis are displayed. This study found a significant (<0.1or <0.5) and positive relationship between changes in organization performance and changes in organizational capabilities and this result supports proposition 2, which states that organizational learning as understood as changes in organizational capabilities has a positive relationship with changes in performance.

In more detail, we found that increases in learning from changes in capabilities as measured in terms of changes in number of freight cars has a positive and significant relationship with the performance variable as measure by changes in the number of containers. This result supports proposition 2.

We also found a negative but not significant relationship between learning from changes in organizational capabilities with performance. We found that increases in learning from changes in capabilities as measured in terms of changes in number of freight trips has a negative and significant relationship with the performance variable as measure by changes in the freight revenue. Also we found that increases in learning from changes in capabilities measured by the number of passenger trips has a

negative and significant relationship with the performance variable as measure by changes in the tons of freight. We also found that increases in learning from changes in capabilities as measured in terms of changes in the number of freight cars has a negative and significant relationship with the performance variable as measure by changes in the freight revenue. We found that increases in learning from changes in capabilities as measured by changes in the number of passenger cars has a negative and significant relationship with the performance variable as measure by changes in the passenger and freight revenue. All these negative relationships do not support proposition 2. Overall, however we conclude that learning from changes in organizational capabilities and legitimacy have positive relationship with performance.

For proposition 3 we found that legitimacy as measured by the budget of SRO has a positive relationship with performance as measured by the number of containers. This finding supports proposition 3.

Table 16: SRO 2006-2014 the Period of Post-SAR Entry Equation 3

$\Delta Z_t, \Delta U_t$

	-	-	-	-	-	-	-	-	-	-
ΔX_t	P	Bud	C	Bud	TF	Bud	FR	Bud	PR	Bud
%Ach	-.905	.896	-.417	-.067	-.683	-.167	.467	-.302	-.452	.361
F.EX	.147	.463	.306	.708	-.242	.503	.938	-.192	.252	.442
P.EX	1.765**	-.1599**	-.043	-.040	.389	.122	-.942	.765	-.931*	.536
R.F.Ac	-.639	.312	.433	-.097	.068	-.233	.292	-.502	1.128**	-.936**
R.P.Ac	-1.391	1.778	.309	.228	-.562	-1.379	.003	.110	1.077**	-.535

** indicate sg at 0.05, * indicate sg at 0.1

Table 16 includes the relationship between the changes in pressure for change using ΔX_t with changes in organization performance ΔZ_t and changes in legitimacy ΔU_t . Our study found a significant (<0.1or <0.5) and negative relationship between the changes in pressure for change with changes in

organizational performance. This weakly supports proposition 4, which states changes in performance has a negative relationship with changes in pressure for change.

In examining *Table 16* in more detail, we found that changes in performance as measured by changes in the passenger revenue has a negative and significant relationship with changes in pressure for change as measured by changes passenger expenses. Although this finding supports proposition 4, we also found a positive and significant relationships which can be seen between the changes in performance as measured by the changes in number of passenger with the changes in pressure for change as measured by passenger expenses. Also we found a positive and significant relationship between the changes in performance as measured by the changes of the passenger revenue with the changes in pressure for change as measured by the ratio of freight and passenger accident. This relationship does not support proposition 4. Overall, however we found that change in performance has a negative relationship with pressure for change.

Our results as reported in *Table 16* also weakly supports proposition 5, which states that changes in legitimacy has a negative relationship with changes in pressure for change. We found that changes in legitimacy as measured by changes in the budget have a negative and significant relationship with the changes in pressure for change as measured by passenger expenses. We also found that changes in legitimacy as measured by changes in the budget have a negative and significant relationship with the changes in pressure for change as measured by the ratio of freight accidents. We feel this sign is in the predicted direction and shows support for proposition 5.

2- Discussion

1- General Results Discussion

As an exploratory study we found partial support for our model and propositions. Through our use of differences variable regressions analysis, we tested our model as it was expressed in the series of difference equations.

Although the time series of SAR is short, we found that all relationships are as we expected and the results were the same hypothesized direction as in our model. The results didn't show significance which can be explained in that our model may not sensitive enough to be able to show significant relationships if the time series is short. By following the result of SAR we summarize as follow; we found both positive relationships between pressure for change and learning from changes in organizational capability. Also we found that learning from changes in organizational capability has positive effect on performance. And legitimacy has a positive effect on performance. Performance and legitimacy have, however, a negative relationship on the pressure for change. These results show, that SAR as a startup organization is developing and surviving the period of liability of newness. It is true that our model is mainly focus on the old established organization with a long period of time as well as with liability of renewal, but we can show partial support for a new organization experiencing liability of newness. For future studies we aim to include a large group of new companies' capabilities, performance, legitimacy and pressure for change variables to measure the ability of overcoming liability of newness.

On the one hand, and as can be seen in our results, SRO has difficulties in overcoming the liability of renewal through changing its capabilities as indicated by the structure inertia seen over the time series from 2001-2014.

On the other hand, our results show partial support for our model, and it seems that SRO has changed some of its capabilities especially in the freight sector which has allowed SRO to learn from the changes and as a result improve its performance. This was indicated by the positive relationships between organizational learning and performance. We also noted that there are positive relationships between legitimacy and performance in our model. This study found that both performance and legitimacy have a negative relationship on the pressure for change. Whenever SRO has low performance and/or loss of legitimacy we found an increase in pressure for change, which in turn affects SRO learning as seen in changes in capabilities positively.

We found that the more data over a long period of time we have, the more significance we found. This shows that with less data and short period of time we may not get significance as can be seen in the SAR case. In the analysis of the pre-and post SAR entry, we used more data and a shorter period of time for pre SAR entry of 4 years and 9 years after SAR entry. We found that SRO was affected by the environmental changes which were caused by the SAR entry. This finding is discussed in the following discussion.

2- SRO the Period of Pre and Post SAR Entry Discussion

In this section of our discussion, we re-examine the periods of pre and post SAR entry in the result section from *table 11 to table 16*. Our re-examination shows the overall significant, insignificant supported and unsupported results. We denoted *S* if the result is significant and supported. *US* if the result is significant and unsupported, *N/R S* if result is not significant but supported and finally *N/R US* if the result is not significant and unsupported.

Table 17: SRO the Period of Pre-SAR Entry Equation 1

ΔY_t	X_t	Y_{t-1}
S	0	3
US	3	2
N/R S	16	17
N/R US	11	8

Tables 17 and 18 discuss the result shown in table 11 and 14 in which we showed that X_t the pressure for change has a positive relationship with ΔY_t learning from changes in organizational capability. Also α_2 the coefficient of Y_{t-1} the lag of changes in organizational capability as an indicator of inertia has a negative relationship with ΔY_t learning from changes in organizational capability.

We found that pressure for change has no significant but supported results with learning for changes in organizational capability. This shows that SRO used to have a low degree of pressure for change in its capability before SAR entry. At the same time the result shows that SRO used to have a high degree of inertia in both passenger and freight operations. This finding can explain the reason behind the entry of SAR.

Table 18: SRO the Period of Post-SAR Entry Equation 1

ΔY_t	X_t	Y_{t-1}
S	0	4
US	4	0
N/R S	14	17
N/R US	12	9

Again we found that pressure for change has no significant but supported results with learning from changes in organizational capability which means that SRO does not have much pressure to change. But the degree of inertia increases as a result of ineffective change in the organizational capability.

Table 19: SRO the Period of Pre-SAR Entry Equation 2

ΔZ_t	ΔY_t	U_t
S	1	1
US	0	0
N/R S	13	21
N/R US	16	8

Tables 19 and 20 discuss the result shown in table 12 and 15 in which we showed ΔY_t learning from changes in organizational capability and U_t legitimacy have a positive relationship with ΔZ_t changes in performance.

This table shows that both SRO's learning from changes in organizational capability and legitimacy are affecting its performance positively. Learning from changes in organizational capability at SRO shows a low degree of performing well by learning from changes in organizational capability. At the same time legitimacy affects its performance which shows that SRO cannot perform well without the budget paid by the government.

Table 20: SRO the Period of Post-SAR Entry Equation 2

ΔZ_t	ΔY_t	U_t
S	1	0
US	4	0
N/R S	16	19
N/R US	9	11

Again table 20 shows that both SRO learning from changes in organizational capability and legitimacy are affecting its performance positively. The performance improved by learning from changes in organizational capability in the post SAR entry period. Also legitimacy keeps its effect on performance which shows that SRO cannot perform well without the budget paid by the government.

Table 21: SRO the Period of Pre-SAR Entry Equation 3

ΔX_t	ΔZ_t	ΔU_t
S	2	0
US	1	0
N/R S	7	16
N/R US	15	9

Tables 21 and 22 discuss the results shown in table 13 and 16 in which we showed that ΔZ_t changes in organizational performance and ΔU_t changes in legitimacy have a negative relationship with ΔX_t changes in pressure for change.

In the pre SAR entry, as can be seen in table 21, changes in performance at SRO show more negative and significant relationships which mean that SRO's low performance pushed the government to put more offers to develop it. Also changes in legitimacy can be seen as another factor that caused pressure for change, since the budget paid by the government was lower in pre SAR period than the post period of SAR entry.

Table 22: SRO the Period of Post-SAR Entry Equation 3

ΔX_t	ΔZ_t	ΔU_t
S	1	2
US	3	0
N/R S	10	10
N/R US	11	13

In table 21 shows that changes in legitimacy in the post SAR entry start to show more pressure for change than in the pre SAR entry period. Although changes in performance have less pressure for change we still think that both changes in performance and legitimacy are the main source of pressure for change in our model.

We conclude that the environmental changes whether pre- or post SAR entry has shown partial support for our model. We think that as an exploratory study we have chosen relevant measures of our

variables as can be seen in the *Table 4 in page 57*, to test our propositions. Although these variables were selected carefully in our study, we cannot completely rule out that these measures could be interpreted as multi-variables' measures. However we are confident that these measures show valid results. In future studies we will select and develop more measures to expand our confidence.

As a weakness of this study, we tried to measure changes in organizational capabilities as an indicator of organizational learning which means that we didn't measure the learning process directly. In the future we will need to develop more direct measures of organizational learning. We tried to measure inertia based on the lag of changes in organizational capabilities which also means that we didn't measure inertia directly.

We consider the limitation of the time series to 13 years for SRO and 3 years for SAR as another constraint of our study. We will collect more data over time to increase the data available to examine our variables. Although we were unable to measure the whole model simultaneously, we were able to measure all the expected relationships between variables as shown in each of the equations. Therefore we find preliminary support for our model. In the future, with more data and more refined measures of our variables, we will conduct a simultaneous equation examination of our model.

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Appendix 1

Requested data from SRO 2001-2014

Variable names	Variable code	definition of variables / Operationalization of variables	
Number of wagons for freight	N.W.F	Yearly No. of wagons of freight at SRO	No. of freight wagons per single trip *No. of total freight trips per year
Number of freight trips	N.F.T	Yearly No. of freight trips at SRO	No. of total trips per year/ No. of freight wagons per single train
Number of passenger trips	N.P.T	Yearly No. of Passenger trips	Reserved No of passenger trips
Number of freight cars	N.F.C	Total No. of freight cars in each year at SRO	Added No. of freight cars in each year
Number of passenger cars	N.PC	No. of passenger cars in each year	Added No. of passenger cars in each year
The number of staff	S	Total number staff at SRO each year	Added No. of staff in each year.
Number of passenger	P	Total number of passenger each year	Registered No. of passengers in each year.
Number of container	C	Total number of container each year	Registered No. of containers in each year.
Tons of freight	T.F	Yearly tons of freight at SRO	Registered tons of freight in each year.
Passenger revenue	P.R	Revenue of passenger operation for each year	Registered passenger revenue for operation in each year from the financial statement of SRO.
Freight revenue	F.R	Revenue of Freight operation at SRO for each year	Registered freight revenue for operation in each year from the financial statement of SRO.
Percentage of achieved goals	% Ach G	Percentage of achieved goal each year at SRO	% of achieved goal from the financial statement of SRO in each year.
Freight expenses	F.EX	Expenses of freight operation at SRO for each year	Registered freight expenses for operation in each year from the financial statement of SRO
Passenger expenses	P.EX	Expenses of passenger operation at SRO for each year	Registered passenger expenses for operation in each year from the financial statement of SRO.
Ratio of freight accident	R. F.Ac	Ratio of freight accidents at SRO for each year.	No. of total freight trips per year/% of total accident per year
Ratio of passenger accident	R. P.Ac	Ratio of passenger accidents for each year	No. of total passenger trips per year/% of total accident per year
Budget	Bud	Budget paid by the government and investors for each company SRO	The amount of money paid by the government year from the yearly financial statement of SRO

Appendix 2

Requested data from SAR 2011-2014

Variable names	Variable code	definition of variables / Operationalization of variables	
Number of wagons for freight	N.W.F	Yearly No. of wagons of freight at SAR	No. of freight wagons per single trip *No. of total freight trips per year
Number of freight trips	N.F.T	Yearly No. of freight trips at SAR	No. of total trips per year/ No. of freight wagons per single train
Number of freight cars	N.F.C	Total No. of freight cars in each year at SAR	Added No. of freight cars in each year
The number of staff	S	Total number staff at SAR each year	Added No. of staff in each year.
Tons of freight	T.F	Yearly tons of freight at SAR	Registered tons of freight in each year.
Freight revenue	F.R	Revenue of Freight operation at SAR for each year	Registered freight revenue for operation in each year from the financial statement of SAR.
Percentage of achieved goals	% Ach G	Percentage of achieved goal each year at SAR	% of achieved goal from the financial statement of SAR in each year.
Freight expenses	F.EX	Expenses of freight operation at SAR for each year	Registered freight expenses for operation in each year from the financial statement of SAR
Ratio of freight accident	R. F.Ac	Ratio of freight accidents at SAR for each year.	No. of total freight trips per year/% of total accident per year
Budget	Bud	Budget paid by the government and investors for each company SAR	The amount of money paid by the government year from the yearly financial statement of SAR

Appendix 3

The author's request letter to collect data from SRO

الرقم: 1434-3557 تاريخ المعاملة: 1434/04/30 عدد المرفقات: بدون

بسم الله الرحمن الرحيم

إلى معالي وزير النقل الدكتور جبار بن عبد الصريمي حفظه الله

السلام عليكم ورحمة الله وبركاته

وبعد،،،،،

لنا ابنيكم للبلد سلطان محمد احمد الشهري من طلاب بحثت خدام الحرمين الشريفين لمرحلة الدكتوراه في دولة اليابان، تخصصت في الادارة ويتركز بحثي حول انداء شركات السكك الحديدية. لا اخفي معاليكم سرّاً اني اخترت هذا الموضوع بناء على ما تقومون به من تطوير وتوسعة للسكك الحديدية في مملكتنا الحبيبة.

ومن مبدأ الحرص على الحصول على المعلومات الصحيحة حول المشروع، كان لزاماً وضع جدول زمني للاقتناء بمن يلزمه الامر ومن ضمنهم مدير المؤسسة العامة للسكك الحديدية وايضاً المدير التنفيذي لشركة السعودية للسكك الحديدية سار، ووصولاً إلى معاليكم المدير العام للسكك الحديدية في المملكة العربية السعودية. ومن ضمن العطف قد اتيت، بالفرصة للاقتناء بالدكتور رميح الريمع الرئيس التنفيذي للشركة السعودية للسكك الحديدية وهو حريص على ان يكون مشرفاً على بحثي بغض النظر عن منسبة كارنييس تنفيذي. وعند محاولتي الاقتناء بمدير محطة القطار بالرياض رافض وامر على ان يكون لديه امر او اتاحة من المؤسسة العامة للسكك الحديدية في المنطقة الشرقية، وطوية وفي شهر 3 من عام 2012م تم توجيه خطاب من وزارة التعليم العالي الى قسم العلاقات العامة في المؤسسة العامة للسكك الحديدية في العام الماضي ولكن دون رد.

معالي الوزير ان كل ما اطمح اليه المظومة الصحيحة وان كلتني المحي من اليابان وابحث عنها في كل مكان في مملكتنا الحبيبة، وعليه من هذا المنطلق فقتي اتمنى ان تأخذ جميع الطلبات التالية بعين الاعتبار لما لها من دور عظيم في تطوير وسفل النقل في المملكة العربية السعودية

لذا نرجوا من معاليكم التكرم بالسماح للطلاب بالبحث في المؤسسة العامة للسكك الحديدية. ووضع لوائح ونظم يسمح للباحث من الحصول على المعلومات الصحيحة ومنها ملحة الموافقة على الاشراف على رحلات الطلاب الطوية والتي تخص وزارة النقل.

دعياً لله العزيز القدير ان يسدد خطاكم لما فيه الخير للكثير لهذا البلد المسطاء...

ابنيكم طلاب الدكتوراه
سلطان محمد احمد الشهري
1٠٢٦٦٤٦٩١٧
0549977266
00819014405356
Sultan_9111@hotmail.com

مكتب الوزير
رقم نوارد : ٢٨٢٧/٠١
التاريخ : ٤٣٤١/٠٤/٢٧
المرفقات : ب

٢٨٢٧/٠١
٤٣٤١/٠٤/٢٧
ب

Appendix 4

The permission letter from the Minister of Transportation



مكتب الوزير

رقم الصادر : ٩٣٣/٠١

التاريخ : ٤٣٤/٠٤/٢٩

المرفقات : بدون



المملكة العربية السعودية

وزارة النقل

مكتب الوزير

٧٠٠٠٨٧٤٠٠٣

المحترم

المكرم الأخ سلطان بن محمد أحمد الشهري

السلام عليكم ورحمة الله وبركاته :

تسلمت خطابكم بتاريخ ١٤٣٤/٤/٢٧ هـ وأسعدني ما ذكرتم فيه من قيامكم بعمل بحث حول إدارة شركات السكك الحديدية لمرحلة الدكتوراه التي تسعون لنيها من إحدى الجامعات في دولة اليابان ضمن برنامج بعثات خدام الحرمين الشريفين ، وما ذكرتم فيه من رغبتكم الحصول على المعلومات الصحيحة من مصادرها هنا في المؤسسة العامة للخطوط الحديدية للاستعانة بها في بحثكم .

وأفيدكم بأن جميع المعلومات متاحة للباحثين كافة ، ووزارة النقل تشجع وتدعو لإجراء البحوث في مجالات النقل بكافة أنماطه .

وقد وجهنا المختصين لتقديم كل المعلومات التي تطلبونها ضمن مجال بحثكم وبإمكانكم الالتقاء بمن تريدون في المؤسسة .

نسأل الله لكم ولكل المتبعثين التوفيق والنجاح ليعودوا بعلمهم وما اكتسبوه من خبرات ليساهموا في نهضة بلادنا العزيزة .

ولكم أطيب تحياتي .


وزير النقل

جباره بن عيد الصريصري

Appendix 5

Written permission from the Minister of Transportation

الرقم: 1434-3557 تاريخ المعاملة: 1434/04/30 عدد المرفقات: بدون





المملكة العربية السعودية
وزارة النقل
مكتب الوزير

التاريخ: ١٤٣٤-٠٤-٢٧

((نموذج إحالة لملف))

المرفق وارد من : مواطنين	تاريخ: ١٤٣٤/٠٤/٢٧	برقم: بدون
قيد بمكتب الوزير برقم : ٢٨٢٧/٠١	المرفقات: ب	تاريخ: ١٤٣٤/٠٤/٢٧
الموضوع : طلب طلب الدكتوراه في اليابان / سلطان محمد احمد الشهري الباحث في السمك الحديدية السماح والإشراف على بحث رسالة الدكتوراه .		
الرقم السابق المشار إليه	تاريخ :	تاريخ :
صادر إلى :	برقم :	برقم :
<input type="checkbox"/> كتب <input type="checkbox"/> أحوال إلى	<input type="checkbox"/> معالي الرئيس العام للمؤسسة العامة للخطوط الحديدية <input type="checkbox"/> سعادة وكيل الوزارة للطرق <input type="checkbox"/> سعادة وكيل الوزارة للنقل <input type="checkbox"/> سعادة وكيل الوزارة للتخطيط والمتابعة <input checked="" type="checkbox"/> سعادة المستشار المشرف العام على مكتبنا <input type="checkbox"/> سعادة مدير عام الشؤون الإدارية والمالية <input type="checkbox"/> مدير عام وحدة المراجعة الداخلية	<input type="checkbox"/> معالي رئيس المؤسسة العامة للموانئ <input type="checkbox"/> مدير عام الإدارة العامة للشؤون القانونية <input type="checkbox"/> مدير عام الإدارة العامة للمتابعة <input type="checkbox"/> مدير عام إدارة التعاون الدولي <input type="checkbox"/> مدير عام تقنية المعلومات <input type="checkbox"/> مدير عام إدارة العلاقات العامة <input type="checkbox"/> مدير إدارة الأمن والسلامة
<p>ليقار بآراء المدعوين مع ما في شأنه من جهة أخرى</p> <p>رأه صيغ المعلومات خاصة ليد صميم</p> <p>بالتفصيل في الجوانب الفنية والمالية</p> <p>الإلتقاء عليه برصيد الدولة</p> <p>الدفع ابراهيم لواردي للتناهم</p>		
صورة ل:		
صورة ل:		

١١٤٣٤٢٨٢٧٠١

Appendix 7

The request letter from the author's advisor, Professor Methé'



KWANSEI GAKUIN UNIVERSITY

Institute of Business and Accounting
Tel. 0798-54-6572, Fax 0798-54-6581

1-155 Uegahara 1-bancho,
Nishinomiya-shi, JAPAN 662-8501

Date: July 10, 2013

To whom it may concern,

This is to confirm that Mr. SULTAN ALSHEHRI is a registered student from September 20, 2011 studying towards the degree of PhD, at the Graduate Department of Advanced Management.

The program involves reading, interviewing business people, collecting data at companies, preparing written drafts, among other academic activities.

The above mentioned student has to travel for visiting companies such as The Saudi Railway Company (SAR), The Saudi Railway Organization (SRO), and purchase necessary materials for his research and dissertation.

Sincerely,

David Methé
Professor
Graduate Department of Advanced Management
Institute of Business and Accounting
Kwansei Gakuin University
Japan

関西学院大学経営戦略研究科
〒662-8501 西宮市上ヶ原 1-1-155 電話 0798-54-6572 Fax 0798-54-6581 e-mail iba@kwansei.ac.jp