The Reconstruction of Sears Holdings Utilizing Enterprise Architecture

Final Project, Enterprise Architecture: ICT-4010

Solution-Oriented EA Report

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Executive Summary

Sears Holdings is previous industry leading retail organization. The original Sears company was founded by Richard Warren Sears in 1893, in Chicago, Illinois. Over the years, Sears expanded and first became the Sears Roebuck and Company with the partnership between Richard Warren Sears and Alvah Curtis Roebuck. The company changed their name and became the Sears Holdings Company in 2005 under the power of CEO Eddie Lampert. At this point, Sears Holdings was now the parent organization to the Sears and Kmart retail stores. Since 2005-2007, the Sears Holdings Company witnessed a tremendous decrease in their stock price and a devastating quarterly earnings report. Currently, the Sears Holdings corporation has closed well over three-hundred of their domestic retail locations for both subsidiaries and is walking a thin line next to bankruptcy. This paper speaks about how the Sears Holdings Company can benefit from utilizing Enterprise Architecture in their organization utilizing the TOGAF®1 framework. Sears Holdings has loosely coupled information systems and databases, as well as a highly diversified operating model between the parent company and both subsidiaries. The corporation is looking to transition their business model to focus heavily on Information Technology and Big Data, utilizing the Apache® Hadoop®2 software library. By integrating the TOGAF architecture framework, with its Architecture Delivery Model (ADM), the company will migrate to a new Coordination Operating Model through each phase of the ADM. The company will also use the Information Technology Infrastructure Library (ITIL®3) to manage all business and IT services within the Sears Holdings Company. Lastly, to help with this implementation,

1TOGAF is a registered trademark of The Open Group.
2 Apache and Hadoop are trademarks of the Apache Software Foundation
3 ITIL is a (registered) Trade Mark of AXELOS Limited. All rights reserved.
Sears Holdings will utilize Agile development methodologies, such as Scrum for both future architecture and IT development.
General Background and Vision

The Sears Holdings Corporation (NASDAQ: SHLD) is a leading integrated retailer focused on seamlessly connecting the digital and physical shopping experiences to serve their members – wherever, whenever and however they want to shop (Sears Holdings, Accessed: May 7, 2018). They are a leader in home appliances, tools, lawn and garden, home electronics, and automotive repair and maintenance. The current share price for the organization, as of May 04, 2018, is $3.30 (Google Finance, Accessed: May 7, 2018). As the numbers show, the Sears Holdings Company struggled immensely to regain control of their market share, along with their brands. The Sears Holdings brands consists of Sears and Kmart retail stores. The Sears Holdings Company in October of 2017 announced that they would be closing seventy-two of their retail stores around the country. In 1992, the Sears Company had reached revenues of $59 billion, according to Investopedia (Floyd, May 9, 2018). In 2007, the company began to see some growth in their share price with the newly acquired Kmart Holdings Company. After this peak, the company then saw their profits fall and nearly fall to zero by the years 2010 and 2011. With a lack of resources, Sears had to resort to cutting hours, pay and headcounts of retail staff. Much of the demise of the Sears Holdings Company can be attributed to the lack of e-commerce participation early on and poor, misguided business decisions and mergers over the years (Floyd, May 9, 2018). Sears uses the Hadoop software library for the development and data storage of their digital products (Apache Hadoop, Accessed: May 9, 2018). Written in the Harvard Business Review, Sears Holdings realized the value that this data could bring the organization. Each of the company’s independent business units, such as Sears, Craftsman, Lands’ End, and Kmart, have all collected data on their customers and prior business and IT
decisions. The Sears Holdings Company has already begun to use Hadoop clusters to hold its customer data through different intertwined servers. Hadoop can process several petabytes of data at a fraction of the cost of a comparable standard data warehouse (Harvard Business Review, Accessed: May 9, 2018). Sears Holdings’ CTO, Phil Shelley, states that he is surprised about the ease of the transition with data storage and migration with Hadoop. They can utilize a framework like TOGAF with the Open Group’s Architecture Development Method (ADM) to assist with Big Data decisions and structure. They will follow the TOGAF ADM phase system to build out their Enterprise Architecture along with the Agile Scrum methodology. Eventually, after further standardization of their EA, Sears Holdings will follow a Coordination Operating model and integrate the Information Technology Infrastructure Library (ITIL) for IT Service Management.

Identification

Sears Holdings Company’s Architecture Issues

Fall of Organizational Management: Issue 1

- The Sears Holdings Company is loosely governed from CEO Eddie Lampert, with lack of participation and heavy criticism. The company just recently is beginning to shift their sales to a digital e-commerce platform but is late into the industry. Governance and management occur from a distance through video conferencing instead of personal interaction.
Data, Information, and Knowledge: Issue 2

- Data breaches have affected customers globally. Sears Holdings also has limited data understanding until recently with the acquisition of the Apache Hadoop data library and construction of multiple domestic data/server centers and technology platforms.

Information Technology and Other Technology: Issue 3

- Sears Holdings is just beginning to utilize the Hadoop data library and mobile e-commerce. The company recently instituted their website and mobile application for the Shop Your Way platform, where customers can cash in points with every purchase as rewards (Figure 5). Failed digital footprint in brick and mortar locations.


- The company is adhering close to a Diversification operating model with separation of business units and cash inflow. There is little to no standardization and integration among the different business units. Poor management and policies have led the company to border bankruptcy and require funding from CEO Lampert’s ESL hedge fund.

Architecture Frameworks, Reference Models, Patterns, and Implementation: Issue 5

- The Sears Holdings Company has struggled with no apparent architectural framework and/or sub-architecture frameworks for IT and Business strategy guidance. The company is beginning to demonstrate that there is a vision of technological integration and implantation, however, it is very delayed compared to competitors. They follow their framework for profit diagram, which acts as a reference for a business model.
Analysis of Architecture Issues

The Sears Holdings Company faces a wide array of challenges with their poor management solutions, low standardization and integration, diversified business units, late technological presence and uncertain architecture. Throughout this section of the paper, we will cover the architectural issues that the organization faces and where their future architectural goal is. Each architectural issue will be broken into a business case section, current state, and future state. Following the future state, the section for future requirements and finally, the Gap Analysis.

Fall of Organizational Management: Issue 1

Business Case

Management has caused a large problem at the Sears Holdings Company, causing uncertainty among executives and company subsidiaries. Each part of the parent company operates completely individually from one another, fueling the concept of a diversification operating model. There are countless examples of the Sears Holdings CEO hosting impromptu video conference sessions with different corporate employees, displaying frustration. The use of poor management in the Sears Holdings Company has completely driven the organization to find new business alternatives and ventures.

Current State: Issue 1

The organization does not have a current architecture already defined. Within recent years, the Sears Holdings stock price has tremendously taken a dive. In 2014, the stock price reached an all-time high of $42, while the current stock price is $3 (Google Finance, Accessed: May 24,
The company has put forth many goals for future business operations and functionality. These are:

- Create autonomous business units that interact and integrate well with one another
- Leave the retail market under the Sears and Kmart retail chain names
- Integrate IT further into the company’s core
- Change Operating Model and define it as official
- Leverage new services and platforms

Future State: Issue 1

With these goals mentioned, the Sears Holdings Company has a substantial amount of work ahead of them to change their services, product, operating model, management strategy, and implementation of Enterprise Architecture. The future Enterprise Architecture will involve a complete change towards the coordination operating model, along with the standardization and integration of business processes and database structures. The organization in the future will be well managed through individual business units. Also, the Sears Holdings Company will integrate the use of the Scrum development methodology. A scrum is a form of the parent Agile development methodology and framework, where people can address complex adaptive problems, while productively and creatively delivering products of the highest possible value (Scrum.org, Accessed: May 16, 2018).

Gap Analysis

Sears Holdings needs to find a proper operating model that is going to best assist their organization for success. The company is bordering bankruptcy and permanent failure after
many powerful years in the retail industry. The company also needs to learn to integrate old and new channels of data and IT to produce a strong Foundation for Execution (FFE).

Data, Information and Knowledge: Issue 2

Business Case: Issue 2

The Sear Holdings Company recently migrated to the Hadoop data library to analyze important trends in the data about customers, products, and different retail markets. The company suffered from a data breach nearing the end of 2017, between the months of September and October. This breach affected nearly one-hundred thousand online retail customers and mainly compromised the customer’s credit card information (White, April 5, 2018). The security of all information and data that is sent to the company’s servers and databases requires improvement and assurance that it will not become stolen or corrupt. In addition to security, data provides organizations with deep insights into their current state, revenue, sales, customer base, and much more. Sears Holdings has only recently embarked on the Big Data journey.

Current State: Issue 2

Currently, the Sears Holdings Company is struggling to keep data and information at the forefront of their company’s strategy. CEO Eddie Lampert and his team of executives need to focus on their current data and information to help further their business strategy. They must continue to use data libraries like Apache Hadoop to centralize and dynamically learn information about this data. With over 1,430 stores nationwide, the company has a plethora of first time and loyal customers. All of these customers contribute to the organization’s parent Hadoop data store, similar to a Redux Store in React. Once the Sears Holdings Company learns how to utilize this data, it will better assist them to choose an operating model and begin
implementing an EA. The organization does have many plans for the future regarding data, information, and knowledge. These are:

- Use Apache’s Hadoop Software library and toolset to analyze and aggregate data
- Prevent further information and data loss with the prevention of data breaches
- Focus on transitioning retail business model to data centers and web hosting (similar to Amazon Web Services (AWS))
- Learn from product and customer purchase and shopping information
- Engage in Shop Your Way Rewards Program data

Future State: Issue 2

The Sears Holdings Company has quite some time until they reach their eventual goal of breaking even or positive with their net cash flow. CEO Eddie Lampert has maintained Sears Holdings’ ownership of subsidiary brands through his hedge fund, ESL Investments. The Motley Fool mentions that Lampert is trying to put the company on a stronger financial footing through cash infusion and debt reduction (Levine-Weinberg, The Motley Fool). CTO Phil Shelley states that there are specific use cases for Big Data. These may entail if the business is lacking revenue in a certain aspect, database queries are running very slow, the company has non-scalable mainframe systems, or the marketing teams want to engage with customer individualized marketing. Shelley also mentions that capturing and storing data takes time. At the time that data can be analyzed, it may be old data that depicts incorrect trends and information. Hadoop ensures that this data is captured, stored, and analyzed at incredibly high speeds in order for instant feedback. Shelley also mentions that he wants to keep Sears Holdings as a “No ETL” zone, avoiding complete data latency. Sears Holdings combines in-house and outsourced data
analyzation, while still remaining to use Hadoop, according to CTO Shelley (Schuchart, January 16, 2013).

**Gap Analysis: Issue 2**

As Lampert and Shelley work together, the mission of the Sears Holdings Company is rapidly changing and expanding on a daily basis. CTO Phil Shelley is attempting his best to use practices like Hadoop and Agile development methodologies to better assist his company in the future. The Sears Holdings Company does not want to encounter further disruption from internal and customer data through the form of data breaches or querying latency. In an interview with Wendy Schuchart and Phil Shelley for Tech Target, Shelley states that the Sears Holdings Company is a “no ETL (Extract, Transform, and Load)” company, due to the use of data warehouses and latency for data analyzation. The Sears Holdings Company is planning on utilizing all internal and customer data to better implement their digital footprint and shift their business model. Sears Holdings plans to convert many of their current retail building infrastructures to data warehouses, totaling 2,500 in the U.S (Ryan, May 31, 2013). With properly applied Enterprise Architecture, the company will be able to easily leverage Big Data with Hadoop and determine the optimal operating model and framework.

**Information Technology and Other Technology: Issue 3**

**Business Case: Issue 3**

For years, the organization made most of their revenue from brick and mortar retail stores that were located domestically. Their view was different for each individual market. Now, with the introduction of e-commerce, companies like Sears Holdings are attempting to shift their entire business model and drive customer incentives with software and data. An example of this was
Amazon obtaining $136 billion in sales during 2017, with an expected revenue of $177 billion by the end of this year, 2018 (Desjardins, December 20, 2017). Numbers such as these put an indefinite amount of pressure on retailers such as Sears and Kmart. Sears Holdings’ future view is to become an e-commerce powerhouse and fully embrace the integration of Information Technology into their business model.

**Current State: Issue 3**

In the 1990s, Sears Holdings made many investments to integrate technology into their retail stores, in order to better assist the operations and Point of Sale (POS) for the customer. Specifically in 1993, under the CEO Arthur Martinez, Sears Holdings invested over $4 billion for a five-year store renovation plan. The goal was to make the store more efficient, attractive, and convenient by bringing all transactions closer to the sales floor in each retail store. The company also used IT to centralize every store’s general offices, cashiers, customer services and credit functions (Cozart, Accessed: May 17, 2018). Sears Roebuck at the time, was the second largest investor in Information Technology in the field of networking and noncomputer firms. With databases home to information of greater than sixty million customers and Sears credit card holders, the company began to use target marketing. They used their collected customer data and mailings and contract renewal forms as a follow-up to recent purchases from their retail stores. New POS systems were used to issue new credit cards, accept charge card payments, issue gift certificates, and report account information back to account holders. Sears also implemented ATMs into their stores for cash advance incentives to credit card holders, as well as electronic ordering systems for direct contact to suppliers. Their adoption of IT and other technology-related investments, along with store remodeling, operating costs are
substantially high. The Sears Holdings Company is using online marketing, data science, e-commerce, and mobile applications to re-gentrify their business model (Cozart, Accessed: May 17, 2018).

Future State: Issue 3

As the current state of the organization depicts, the Sears Holdings Company is using a completely diversified operating model and is attempting to use Information Technology and data to change their business functionality. With EA, Sears Holdings will also learn to further integrate additional frameworks like TOGAF and ITIL for assistance with managing development and information systems architecture. They can eventually utilize either the Agile Scrum or Kanban methodologies for software projects as well. With the use of IT server infrastructure, data warehouses, and other e-commerce, the company is beginning to see progress. However, there is plenty of room for growth.

Gap Analysis: Issue 3

The Sears Holdings Company is continuing to push towards an architectural vision of complete IT integration. The gap between their current state and envisioned IT state is quite wide and will require a substantial amount of investments and change. With so many retail stores around the country, Sears Holdings will need to evaluate how many data centers are necessary and what they plan to do with these data centers. If the organization plans to completely change their product and begin to sell hosting and cloud computing services, they will encounter competition from other large corporations such as Amazon with AWS. Alternatively, if the company were to become strictly e-commerce oriented, they still face competition from Amazon and other large online retailers. Sears Holdings can also leverage Information
Technology Infrastructure Library (ITIL). It will help the company with tools, practices, management recommendations, and financial advice to better assist them with their Information Technology transitions.


Business Case: Issue 4

Sears Holdings is poorly managed and struggling to find their modern industry purpose. Better management and a solution-oriented architecture is crucial for the company’s survival. Due to Sears owning two separate retail chains, diversification is relatively unavoidable. Sears Holdings has four main value propositions. These are:

- Offering low prices and frequent discount deals to all customers
- Broad Portfolio of products spanning many genres
- Robust market reach with stores in nearly every US state
- Newly offered e-commerce websites, mobile applications, home delivery, and in-store pickups


The organization is currently ranked around 111th in Fortune 500 companies and needs to remain focused on a positive ROI.

Current State: Issue 4

As mentioned above, the Sears Holdings Company is struggling to define their operating model and tends to utilize a highly diversified management system. In a Forbes article titled The 5 Ways Ed Lampert Destroyed Sears, author Adam Hartung mentions multiple reasons for the
current difficulties that the Sears Holdings Corporation are facing. Hartung defines these difficulties with five main reasons:

- Micro-management in lieu of strategy
  - Many recordings and records prove that CEO Lampert and other business executives within the organization were constantly monitoring one another and other lower level employees. Decisions by executives were constantly questioned by the CEO and other executives. This has caused the company to focus less on successful business and more on the greater micromanagement of all employees, both corporate and retail.

- Manage-by-the-numbers rather than trends
  - Lampert and other lead business executives within Sears Holdings are primarily concentrated on numbers and financial analysis. They use these analytics to determine market trends that will eventually help the company drive business decisions. As Hartung mentions, trends often are determined at a point that is way too late. Trends can assist in understanding business process; however, certain skills are still required for merchandising and e-commerce.

- Seeking confirmation rather than disagreement
  - Hartung also states that CEO Lampert is ultimately one-sided. If any employees or executives disagreed with company decisions and data, Lampert often lets those employees go. Many executives did not remain part of the company for more than a year or two at most.

- Holding assets too long
In the early 2000s, Sears Holdings was an owner of multiple assets that were profitable for the organization. In addition to the Sears and Kmart retail chains, the corporation also was an owner of Lands’ End clothing, Die Hard Hardware tools, and Kenmore appliances. The Forbes article mentions that Sears Holdings held onto these assets instead of selling them or focusing their interest elsewhere. Certain brands may have been able to be sold for considerable revenue. If so, this would have allowed the Sears Holdings company to shift their interest into the expanding industry of e-commerce and IT.

Hubris – Unfailingly believing in oneself regardless of the outcomes

Stemming from the point above, CEO Eddie Lampert continues to lack the interest in changing his management style and business processes. He is notorious for only keeping staff around that agree with his business model and decisions. Therefore, with a lack of options or agreement on different business alternatives, the Sears Holdings company does not share the proper flexibility. (Hartung, February 11, 2016).

Future State: Issue 4

The future state of the Sears Holdings Corporation is completely dependent upon the correct choices for business processes, policies, and procedures. Many frameworks for Enterprise Architecture are beneficial, however, TOGAF from the Open Group is extremely scalable with an organization and highly documented for the best EA outcome. TOGAF outlines a strong foundation for architecture development phases known as the TOGAF ADM. Each phase helps the company learn how to integrate their business strategy and IT closer together (Figure 4).
The first phase in TOGAF’s ADM is known as the Architecture Vision. This is where the company learns to lay out where they see their end-point and expected gain. It also helps them to create a high-level roadmap for their architecture. Second, or Phase B, is creating a business architecture. This is where the company creates an architecture definition document and defines business principles, goals, and drivers. Phase C helps define the implementation and use cases for information systems into the company’s architecture. Phase D helps with the further inclusion of other technology into the framework. Phase E, Opportunities and Solutions, focuses on the initial planning and implementation of the Enterprise Architecture. Phase F helps the company move from their baseline architecture to their eventual target architecture. This phase is known as migration planning. Phase G is the implementation of governance. During this phase, the company defines what and how the company will govern itself throughout the architecture implementation process. TOGAF provides a strong amount of documentation in the ADM about architecture governance. Lastly, Phase H helps with architecture change management. It establishes a set of rules that help the company to manage change with any architecture components and procedures in the company’s Enterprise Architecture.

**Gap Analysis: Issue 4**

For the Sears Holdings Company to transition from their current “architecture”, which is undefined, to their new architecture, it will take quite some work. The company needs to focus on making better business decisions and learn from their mistakes. The TOGAF framework with its ADM and ITIL frameworks will help lead the Sears Holdings Company to stricter governance and future success.
Architecture Frameworks, Reference Models, Patterns, and Implementation: Issue 5

Business Case: Issue 5

The Sears Holdings Company does not appear to have a solid Enterprise Architecture instated into their company. Sears Holdings currently is using:

- Hadoop Data Stores
- Scattered Databases on multiple server platforms
- Diversified business units
- No defined Reference Models
- Little standardization and integration among IT and Business Units

Without a defined architecture, operating model, or reference model, the Sears Holdings Corporation has room for growth and evolution. Sears Revenue had dropped nearly 50% from 2011 to 2016 and the company recorded a loss of more than $8.2 billion (Peterson, January 08, 2017). Enterprise Architecture can help mitigate these issues in the future and get the organization back up and running.

Current State: Issue 5

The company, as mentioned in the business case, is putting a huge precedence on learning to integrate and use Information Technology and build a better FFE. At the moment, many of the retail stores in the Sears Holdings Company are experiencing maintenance delays, rodent infestation, leakage in the floor and ceilings, as well as empty space on their showroom floor (Peterson, January 08, 2017). Many suppliers are retreating from helping the corporation with inventory stocks, therefore causing many retail stores to struggle with finding the proper area
for inventory stocking. The company has many areas where architecture can help. EA can help mitigate the issue below:

- IT infrastructure and integrated information systems
- Inventory tracking for all retail stores nationwide
- Poor management from a corporate level
- Continuous investments from the ESL Hedge fund to prevent the company from further downfall

Future State: Issue 5

Similar to the previous issue in the organization, the Sears Holdings Company would greatly benefit from using the TOGAF architecture framework, as well as the integration from other frameworks like ITIL. The company can also plan to use Agile development methodologies such as Scrum or Kanban. By utilizing one of these different Agile methodologies, the company can learn which projects are awaiting their start and implementation, which projects are in the process of implementation, as well as, which projects are completed. Steve Dennings from Forbes states that the Scrum Association recorded over 40,000 members as of July 2015. Since then, both the parent methodology of Agile development and Scrum have gained massive amounts of popularity (Dennings, July 23, 2015). With the guidance of the TOGAF ADM model and other sub-architecture frameworks like ITIL, the Sears Holdings Company will learn to adapt to the new digital times. ADM combined with Scrum will ensure positive implementation.

Gap Analysis: Issue 5

Due to the lack of proper guidance, tightly-coupled information systems, and strong management, the Sears Holdings Organization is losing revenue and market trust at a rapid
pace. The company with its use of Big Data will be able to analyze past data trends that will help the company to determine their target market and choose their proper architecture. Helping to hire or train employees with an architecture certification, like the TOGAF 9.1 certification, will better assist making the correct Enterprise Architecture decisions for the future of the Sears Holdings Corporation.

**Recommended Solutions and High-level Roadmap**

With this information, the question becomes, what is the proper choice? The Sears Holdings Company will require a great amount of effort in the implementation of an Enterprise Architecture. From what is currently an architectural nightmare, the company will require a completely new Enterprise Architecture, new information systems, a new operating model, integration and standardization across all IT and business units, as well as much more. First the Sears Holdings Company needs to begin with utilizing an architectural framework such as TOGAF. TOGAF will provide the organization a multi-step process in helping define and utilize their Enterprise Architecture. TOGAF’s Architecture Development Methodology (ADM) helps define the corporation’s architecture and proper operating model. The ADM also helps with the implementation of each phase individually for the company. The company will also utilize the ITIL framework for service delivery management of their e-commerce services. They will utilize the Scrum methodology to assist with proper development and deployment. Sears Holdings is attempting to move to the concept of Big Data with Hadoop to fully understand how to change their business and operating model. With these five different challenges presented, there are
many useful changes that come out of Enterprise Architecture Implementation for the Sears Holdings Company.

**Fall of Organizational Management: Solution 1**

In regards to management, the TOGAF ADM model is the perfect solution. ADM stands for Architecture Development Method. Due to poor management, Sears Holdings is having tremendous difficulty with realigning their company vision and creating a strong Foundation for Execution (FFE). TOGAF’s ADM helps with each layer of the company’s architecture, including both the business, IT, and application layers. The ADM assists with strategy and motivation, implementation and migration, design, planning, functionality, and structure. THE ADM lifecycle works in a circular motion, ensuring that the completion of one phase leads into the next phase of building the architecture. Each of the phases are:

- Preliminary
  - A. Architecture Vision
  - B. Business Architecture
  - C. Information Systems Architecture
  - D. Technology Architecture
  - E. Opportunities and Solutions
  - F. Migration Planning
  - G. Implementation Governance
  - H. Architecture Change Management

For management purposes, the TOGAF ADM is ideal. It helps with project planning, architectural requirements, process flows, project compliance assessments and so much more.
The Sears Holdings Company needs to first place heavy investment and interest in their corporate vision. In a statement by CEO Eddie Lampert on July 7, 2017, he mentioned the closing of eight Sears and thirty-five Kmart retail locations, due to unprofitability. The CEO also acknowledged that the corporation is actively changing their business model to adapt to customer behaviors both digitally and in the brick and mortar stores. He mentioned that the company is on track to achieve their $1.25 billion annualized cost savings target (Lampert, July 7, 2017). Implementing the TOGAF framework will help with the development of this business goal and hopefully preserve the company’s subsidiary brands, such as Diehard, Kenmore, and Sears Auto. The preliminary phase of ADM will help the company define their motive for Enterprise Architecture implementation. The company will have the opportunity to define their business principles, business goals, and business drivers. During the preliminary phase and Phase, A, Architecture Vision, Sears Holdings will build upon their interest in Big Data and analyzation of sales and market trends. The company is required to find important stakeholders that will further their new architectural vision. The newly implemented EA team will develop a high-level architecture roadmap that demonstrates the newly chosen Coordination operating model. Eventually, Sears Holdings will have the opportunity to either sell one of their retail businesses or form a joint organization between Sears and Kmart. At this stage, Sears Holdings will also choose a different path for their market. The use of online retail, otherwise known as e-commerce is absolutely fundamental for a modern retail corporation. With the use of Big Data, Sears Holdings will eventually gain insight into what information and products are in demand from the public. At this time, Sears Holdings will have the ability to capitalize upon their Shop Your Way customer membership program to encourage online sales through mobile
and desktop experiences. Phase B, Business Architecture, will help with the previous phases of the TOGAF ADM methodology as well. Business Architecture helps with the identification of positive shareholders, products and services, policies, vision, and business metrics. After defining a business architecture, Sears Holdings will have a roadmap of their architecture, including all necessary frameworks and requirements for development and deployment. If Sears Holdings chooses to keep both retailers, stability is a requirement to achieve a coordination operating model. However, each business unit/retailer will have its own governance structure and control with standardized IT infrastructure and shared customers, suppliers and product data (Compean, April 29, 2016).

Data, Information, and Knowledge: Solution 2

As documented above, the Sears Holdings Company is primarily focused on the concept of Big Data. They are putting a large emphasis on Apache’s Hadoop library and software. Hadoop helps create one large data store/database. The company can then use functionality known as MapReduce, which simply queries the given data and reduces the set to just related query information (Bernard Marr & Co., Accessed: May 20, 2018). The company during Phase C of the TOGA ADM, Information Architecture, will learn to continue the growth of their data facilities and upgrade information systems infrastructure. This includes employee and retail workstations, servers, storage facilities, network transceivers and much more. At this stage of the architecture, further IT standardization across each business unit will become increasingly easier. Although with a coordination operating model the businesses operate relatively independently, all information systems data and infrastructure are shared. This will also help
contribute to the use of Hadoop, allowing one singular database of information between each business unit, home to information on millions of customers worldwide. It is at this point that the company will have a unified insight into their customer base for the necessary edits of the Shop Your Way program. Eventually, with this new insight from Hadoop and integrated data storage, the company can implement machine learning algorithms from libraries like Google’s TensorFlow or IBM’s Watson technologies. With the influx of more data, the system will learn and output customer interaction results for that data. Sears Holdings can analyze those results and choose the correct future path for sales and retail decisions (Google/TensorFlow, Accessed: May 20, 2018) (IBM Watson, Accessed: May 20, 2018).

Information Technology and Other Technology: Solution 3

Phase D in the TOGAF ADM concentrates on Technology Architecture. The Technology Architecture encompasses primarily the technological infrastructure. This includes servers, computer equipment and operating locations, network positioning, software, and middleware. It also focuses on technological outcomes like products, standards and guidelines, services, principles, and policies. This phase aligns well with the previous phase of data, information, and knowledge. During the technology architecture phase, proper software is chosen or developed to meet both customer and internal needs. Sears Holdings will utilize an Agile Scrum methodology during the production and deployment of the different hardware and software for both internal and external use. This is the perfect time within the introduction of Enterprise Architecture for the implementation of the ITIL (Information Technology Infrastructure Library). ITIL’s main diagram helps with service design, transition, and operation. It helps account for
change, incidents, testing, release, configuration, and availability. Sears Holdings can benefit from this by utilizing each of the framework’s strengths. Service Strategy focuses on helping IT organizations improve and understand customer needs and organizational objectives. Service Design takes the detailed service strategy and changes it into a blueprint for delivering the objectives and strategies of the organization. The Service Transition stage helps to plan and manage the change of the service state throughout its entire lifecycle, thus delivering value to the customer. Service Operation ensures the quality and deliverance of all organizational services. Lastly, the Continual Service Improvement stage helps ensure the Quality of Service (QoS) by learning from all past data, both successes and failures (Business Process Incubator, September 13, 2017). Sears Holdings will follow the ITIL framework and TOGAF ADM to obtain all important metrics. In order to display all necessary information, the company can utilize an online TOGAF EA Repository web application that aggregates all components of the EA into individual categories. The user/employee can query the database and find all necessary architecture components easily and efficiently from a user-friendly interface, or UI/GUI (Graphical User Interface).

Business Process, Policies, and Procedures: Solution 4

The remaining phases of the TOGAF ADM are quite powerful for the Enterprise Architecture implementations in the Sears Holdings Company. Now that the company is on the correct path towards establishing and building their Enterprise Architecture, Sears Holdings is ready to move on to Phase E, Opportunities and Solutions. This part of the ADM helps identify the different parameters of change in an organization. During the construction of the Enterprise
Architecture, Sears Holdings will learn which options may need to be newly built or possibly reused from other components. Also, some components such as software, hardware, or cloud computing power can be purchased and integrated into the Enterprise Architecture from a third party. Phase E primarily concentrates on how the vision of current and future architectures are delivered (Orbus Software TV, July 31, 2014). During this phase of the architecture, the final architecture roadmap is completed and deployed as an EA-based artifact. All inputs to this phase occur from previous phases in the Enterprise Architecture from the TOGAF ADM. Phase F helps with the mitigation of error and beginning of architecture implementation. It describes the final costs, expected ROI, performance evaluation, business value, critical success factors, measure of effectiveness, and strategic fit (Orbus Software, August 8, 2014).

Sears Holdings will take these phases of the TOGAF ADM and develop important business practices and processes, as well as a long-term strategy. Sears Holdings, along with the new coordination operating model, may want to diversify management from one central CEO power under Eddie Lampert. With each business unit/subsidiary running autonomously, separate CEOs and other executives can be used to run the different organizations of Sears and Kmart. With each of the business units in the coordination operating model, success is dependent on one another. All data will be shared and important for all IT and business units of the parent company. The Sears Holdings Company will share all investment costs, expected Return On Investment (ROI), past performance from current architecture, and all strategies with the development teams. These metrics will help with the construction of the new data centers and physical infrastructure, as well as other IT infrastructure and hardware. The metrics will act as
the guidance of how to better utilize Hadoop and Big Data to construct a more robust e-commerce system through the Shop Your Way platform. This may include more features through online web apps and/or mobile applications that will benefit the customer and their desired product search.

Architecture Frameworks, Reference Models, Patterns, and Implementation: Solution 5

The remaining phases G and H will also help with the implementation of an Enterprise Architecture in the Sears Holdings Company. The company, at this current point in time, is struggling to learn proper business decisions and value of Information Technology. This is why the use of the TOGAF framework and its ADM, III-RM Reference Models, Continuum, and guidelines are so powerful. Phase G specifically focusses on the implementation of the target architecture, after it has been developed throughout the previous ADM phases. The target Architecture is developed in a series of transitions to reduce risk during the architecture changes (Orbus Software TV, August 18, 2014). Phase H ensures that the implementation of the Enterprise Architecture is safe and successful. It requires continual governance requests, new technologies and changes in the business environment (Orbus Software TV, August 29, 2014). Phase H helps with determining if the architecture change will warrant a simple update or force an entirely new cycle of the TOGAF ADM. All of the changes must relate to business value. The TOGAF ADM also states change is often a requirement and happens incrementally for the organization.

The Sears Holdings Company also can benefit from these following phases of the ADM. Understanding how to arrive at different solutions, migrating current architecture, applying
governance, and utilizing proper management techniques keep the EA successful. This leaves room for creativity within the company for proper guidance and construction. Throughout the entire process from the ground up, TOGAF helps cover each possible architecture outcome. It helps create formalized business architecture, data architecture, application architecture, and technology architecture. All of this is managed through an online/web-based Architecture Repository and the individual phases of the TOGAF ADM. As mentioned in an above architecture solution the Sears Holdings Company can also benefit tremendously from Agile development methodologies and practices, such as Scrum. It is at this point that all proper information systems, IT infrastructure, and hardware can be chosen. Reference models, diagrams, and roadmaps, are drafted to ensure the ease of transition for the Sears Holdings Company to visualize, share, and implement their architecture. The company will continue to use existing technologies, such as Web-Based Architecture (WBA) and Hadoop for the deployment and use of most all applications and middleware within the Sears Holdings system. Once all planning and diagrammed components are completed, the process of Enterprise Architecture implementation begins.

Conclusion
As this paper documents, the Sears Holdings Company has tremendously struggled with poor management, misguidance, improper use of Information Technology, and an undefined operating model. The architecture Road Map of the ADM phases is located in Figure 4 in the Appendix. Each of these different concepts have impacted their revenue, investments, suppliers, employees, and much more. In 2017, Lampert closed a total of 400 retail stores from each subsidiary, leaving only 940 retail locations worldwide (Peterson, January 4, 2018). With
this said, Sears Holdings can see indefinite benefits of the implementation of Enterprise Architecture. The company is also leveraging the Apache Hadoop library and open source software for analyzing and marking data from all customers and internal actions. Hadoop also is allowing the Sears Holdings Company to identify and act upon trends in the organization to help make better decisions in the future regarding their businesses and investments. It helps define each phase of the architecture design and implementation through the Architecture Development Method (ADM). The corporation also can benefit from the use of ITIL for governance over future IT services and infrastructure. Sears Holdings will also utilize Agile Scrum development methodologies for all architecture implementation and future projects. The Scrum method will best assist Sears Holdings with consistent production and administration. To ensure stability and speed, each major phase of the architecture will be completed in sprints slightly longer than the average Scrum sprint (2-4 weeks). The entire company will work together, eventually forming a coordination operating model between information systems, infrastructure, data, and customers. However, both Sears and Kmart will function separately with their own business unit governance and authorities (Figure 3). These include individualizing chief executives and business decisions that report to the parent Sears Holdings company, thus creating business unit autonomy. Each Scrum team consists of the general designer and developer teammates, alongside of the Scrum Master and other company executives for guidance and authority. Lastly, the Sears Holdings Company will continue to follow Big Data to help identify customer and market trends to ensure growth with their online e-commerce presence and Shop Your Way rewards program. When the proper trends are fully analyzed, each subsidiary, Sears and Kmart, will continue to push the use of their Shop Your
Way rewards program and online ordering systems through the use of mobile applications on smartphones and tablets. TOGAF, ITIL, Agile, Scrum, management, the TOGAF ADM, and Architecture Repository, will ensure that proper Enterprise Architecture is implemented and that the Sears Holdings Company will receive the necessary success in the future.
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Appendix and Diagrams

Custom Diagrams

Sears Holdings Company Corporate Structure
(Includes All Subsidiaries)


Figure 1. Sears Holdings Company Corporate Structure
Sears Holdings Information Technology Architecture

Post Enterprise Architecture

Figure 2. Sears Holdings Information Technology Information Architecture
Sears Holdings
Coordination Operating Model

Figure 3. Sears Holdings Coordination Operating Model Diagram

Figure 4. Sears Holdings ADM Architecture Roadmap for Implementation
Sears Holdings Shop Your Way Rewards Program

Referenced From:

Figure 5. Sears Holdings: Shop Your Way Rewards Program Structure
Downloaded Diagrams

(Signan, December 04, 2015)

The Retail Landscape is Changing...

Experience
- Technology is enabling "experience based stores"

Physical stores
- Customers choosing where and when they want to shop

Selection of products
- Customers are not limited to store inventory. Access to endless aisle of products online.

Service
- End to end service from purchase to post purchase to ongoing relationship

Price
- Increased price transparency

Unique Products/Brands
- Innovative products and exclusive brands becoming a key differentiator

(Signan, December 04, 2015)

...we are investing in Integrated Retail Capabilities for our members...

...since technology is driving much of this transformation...
(Martin, June 16-15, 2015)

Green: Parent; Red: Guarantors; Blue: Non-Guarantors; Yellow: Securities

(Mark van Rijmenam, Accessed: May 23, 2018)