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Thesis Title

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Chapter 1

Introduction

general introduction on the latest trends in EA. Eg. EA is moving from IT alignment to system in environment.

Define a clear research question

Research methodology small section state that the project is grounded in design science

Situate the research problem with regards to EA and innovation. State why this is related to EA and innovation. Clearly state what my contribution is.

Chapter 2

Literature Review

2.1 EA research

In the field of EA three schools of though have been identified by LaPalme in [1] each with its own scope and purpose. In this section each school of though will be presented with its definition, objectives, principles, challenges and limitations.
From the literature emerge three scopes and purposes of EA. The first one, that has been named by professor Lapalme *Enterprise IT Architecting*, refers to the term 'enterprise' as the enterprise-wide IT platform, including all components of the enterprise IT assets. In this perception of EA the purpose is to effectively execute and operate the overall enterprise strategy for maintaining a competitive advantage by aligning the business and IT strategies such that the proper IT capabilities are developed to support current and future business needs.
Enterprise Intergrating is the second school of though and in this case the enterprise is defined as a sociocultural, techno-economic system including all facets of the enterprise. EA's purpose is to effectively implement the overall enterprise strategy by designing the various enterprise facets (governance structure, IT capabilities, remuneration policies, work design, etc.) to maximize coherency between them and minimize contradictions.
The last school of though, *Enterprise Ecological Adaptation*, conceptualizes the enterprise in its environment with its bidirectional relationship and transactions between the enterprise and its environment. And help the organization to innovate and adapt by designing the various enterprise facets to maximize organizational learning throughout the enterprise is its purpose.

Enterprise IT Architecting

Enterprise Integrating

Enterprise Ecological Adaptation

2.2 Innovation research

Position the paper related to innovation work, measurement of innovation Crossan.

2.3 EA tools for innovation research

Intro on the tools related to EA, maturity and others.

Position the paper in the context of EA tools for assess innovation.

2.4 Constribution

Restate with more detail what my contribution is.

Contribution - Synthesis and integration of the literature on innovation at an adequate level of detail for applying innovation knowledge in the context of EA. Synthesis of the key concepts of innovation. Creation of an assessment tool: framework, questionnaire and codebook. Test of the tool in a real world environment.

Chapter 3

Methodology

3.1 Design Science

Design science research methodology that it has been used to create the assessment tool.

3.1.1 Construction

How it has been done a systematic literature review of reviews on innovation. Search words in the tile, abstract and keywords: *review innovation, meta-review innovation.* Databases: *Scopus, Inspect and Compendex, Science Direct* Synthesis of the key concepts Design of framework: grouping of the common theories, identify definitions for each element of the framework that are coherent with the rest of the literature.

Codebook

One of the key components of the tool that I have designed is the codebook. This artifact is a set of codes, definitions, and examples used as a guide to help analyze interview data. It is essential to analyzing qualitative research because it provides a formalized operationalization of the codes [2].
Following the processes and suggestions written by DeCuir-Gunby et al. [2] and MacQueen et al. [3] I have constructed the codebook used in this project. I have developed only theory-driven codes since in this project I am identifying and synthesizing concepts from the theory and checking their presence in a real world environment. As explained in one of the guides cited above [2], when creating theory-driven codes three steps are generally executed: (1) generate the code, (2) review and revise the code in context of

the data, and (3) determine the reliability of the code.

Generating a first version of the codes has been a straight forward process. In fact, I have assigned as labels of the code the name of the that element in the framework (e.g. Administrative innovation) and as definition I have used the one in the framework. Only for the codes in the determinant section I had to find a definition of that element since neither the framework and articles had it. Most of the time I have found a clear concise definition on the internet and I've used that one.

I haven't determined the reliability of the codes using a statistical technique since all the practices explained in the cited papers require multiple coders and I have been working alone in this project. Though the codes reliability and consistency has been check in a series of meetings with James Lapalme.

Questionnaire

Construction of questionnaire. Funneling technique.

3.1.2 Evaluation

Evaluation of the tool.

Chapter 4

Analytical tool

4.1 Framework

Describe how I've generated the framework using different definitions and concepts that are presented in the literature and describe how I have grouped them.

Description of the framework.

4.2 Codebook

The codebook is one of the three artifacts produced in this project and plays a crucial role in the analysis of the documents and interviews. In fact, its use will allow me to scientifically determine if an element of the framework identified by a code is present in the documentation of Cisco or not, and whether Cisco's EA team is aware, contributing or not aware of this element.
The codebook follows the structure of the framework and is divided into six parts: innovation as an outcome, innovation as a generation process, innovation as an adoption process, determinants, consequences, and involvement.
For all the sections, the examples have been written after the codes have been reviewed and approved by one of the supervisors of the project.

In the innovation as an outcome part the labels, codes and examples for each element of the framework related to innovation as an outcome are presented. Each label corresponds to the name an element in the framework and each code the definition of its element revised. In particular, for some of the codes the definitions were referring to innovations and they have been modified to the singular form.

In the case of generated radical, generated incremental, adopted incremental and adopted radical innovations I have divided the codes to the basic element (generated, adopted, radical, incremental) to have a better level of detail in the analysis of the documents and interviews.

For the sections of the codebook related to the processes of generating and adopting innovations the work has been very similar. In both cases the definition of the process and sources of innovation derives from the framework. For what concerns the steps of each process they have been labeled with the same nome that they have in framework, but their definitions were not available in the papers that I have taken into consideration. Because of this lack I started looking for the articles cited in Damanpour's article [4] and I have been able to find the definitions for each stage of the innovation processes in Rogers book [5].

As reported in Damanpour's work [4], "Rogers (1995) presents two innovation processes: (1) innovation development process, which mostly falls under the generation process; and innovation process in organizations, which falls under the adoption process".

The section of the codebook related to the determinants there were no definitions in the articles that I have analyzed. This might be because the researchers in that field already agree on common definitions and they have not reported them in their work. To overcome this shortcoming I have searched on Google for definitions for each element that sounded inline with my understanding of that element. To improve the quality of the code I have listed the key factors synthesized in Crossan's article [6] that I will use to assess Cisco practices. In addition to the key factors that decisively affect innovation listed by Crossan I have added the *environmental dynamism* explained by Damanpour [7] since I think that this aspect was not fully addressed in Crossan's work. In order to define this element I have synthesized the description provided by the author.

In the consequences section I have tried to assign a label that recalled the code that it was referring to. In this section the codes are short since the consequences have been split in small codes.

The last section of the codebook is the one referring the codes that will be used to check the level of involvement. In fact the EA team can be aware of some elements of the framework, not aware, or they can be contributing and supporting that element of the framework with some tools or activities. Depending on their level of involvement I will color the respective elements in the framework with three colors: *red* for not aware, *yellow* for aware, and *green* for contributing.

Once the framework and the codebook were finished I have designed the questionnaire that guided the interviews. The main reason why the questionnaire artifact has been written as the last one is that it is easier and more accurate to prepare it once all the elements have been identified in the framework and have been defined in the codebook.

4.3 Questionnaire

In this section I will describe the questionnaire artifact that structured the phone interviews.

As thoroughly described in section 3.1.1, the funneling technique has been adopted when designing the framework and as a result each section of the questionnaire starts with very open questions, that allow the interviewed to bring up his thoughts related to that topic, and then when his reply goes out of bounds a list of closed questions have been written to make sure that the data concerning the element of the framework analyzed are gathered.

Chapter 5

Evaluation at Cisco

5.1 EA at Cisco

In this chapter I will succinctly introduce Cisco and their EA department, and the employees that I have interviewed.

Cisco's EA department

Cisco's EA department is divided in: 160 enterprise architects roles (100 people), and they are purely strategic focused; and 160 solution designer roles (100 people), and they are solution architects. There are three communities of architects at Cisco: Business Architects, System Architects and Technology Architects. the motivation that Cisco has in pursuing EA practices. Gustav told me that EA allows them the recognize opportunities and organize them selves in a way that they can exploit these opportunities. Doing EA has allowed Cisco to capture opportunities and plan shared and collective initiatives and investments. In the past IT has been responsible to solve lot of the problems existing in the business environment and EA was focused on technical architecture. Cisco's EA team has modeled current and future states of the organization trying to provide solutions to the business challenges introducing changes in the operations of the organization. EA now is moving towards an orchestrated EA in which architects both operations & business, and systems & technologies. Business and system architects work together to find a way to exploit the opportunities that have been already recognized. Based on their decisions, investments are made in all the views (BOST) of the organization. Cisco's EA team is doing this following the capability-based planning approach. The enterprise architects work on the strategic level and there are solution architects that design the specific solutions.

Interviewees

Gustav Normark Toppenberg - Sr Manager - Enterprise Architecture

Richard Hare - Enterprise Architect at Cisco Systems - Senior Director of Business Architecture

5.2 Results of the assessment tool

Describe the results.

In this section I will present the results of the coding activity in three parts related to documents, interviews, and the combination of the two.

5.2.1 Documents

I have started assessing Cisco's EA team from a series of documents that they shared with me.

Architecture Practice - Architecture Led Investment Planning

The operational play book covers the Change the Business planning portion of Cisco's Architecture Led Planning process. Among other things, this process enables Change the Business (CtB) prioritization based on a cross-functional architecture view and align ongoing Architecture Planning with Fiscal Year Planning activities. Analyzing the document [8] four matches with the codebook elements have been identified:

1. "Each IT Architecture Grouping collects new Change the Business (CtB) opportunities from their stakeholders"
2. "Each IT Architecture Grouping assesses their Change the Business Opportunities and leverages the BOST Reference Model to define the architecture dependencies and relationships across the Business, Operational, Systems, and Technology views"
3. "Each Architecture Grouping updates their existing Architecture Roadmaps to reflect the new Systems and Technology Capabilities that are required to support the new Change the Business Opportunities"

4. "Each Architecture Grouping structures the Target Systems and Technology Architecture Capabilities scope into a Program and Project hierarchy"

The first one is a match of the *adoption of innovation agenda-setting stage* code because it refers to the identification of new business opportunities and this is the first step of the adoption process, the identification and prioritization of new opportunities. In addition, since is the IT architecture team performing the task of collecting new business opportunities Cisco's EA practices are *supporting* Cisco's innovation.
The other three fragments refer to the *adoption of innovation redefining and restructuring stage* code because they all relate to activities that involve the adaptation of the organization to accommodate the new business opportunity. As for the previous fragment, teams of Cisco's EA department are performing these activities so also in this case they are *supporting* Cisco's innovation.

5.2.2 Interviews

5.2.3 Combination

Chapter 6

Evaluation of the tool

6.1 Evaluation of the tool

Chapter 7

Discussion

7.1 Analysis of Cisco's results

Analysis of the results.

7.2 Feedback from the EA team

Include the feedback from Cisco.

7.3 Challenges of the project

Present the challenges creating the tool

7.4 Limitations of the project

As explained in section 3.1.1 one important limitation of this project is that no statical technique has been applied to control on the reliability of the codes. Through a series of meetings with James Lapalme we have checked the reliability and consistency of the codes. One of the limitations that should be addressed in the future versions of the codebook are a definition for each determinants that comes from the research community instead that from Google. Since I believe that the result of this activity will not drastically affect the project I have listed it as one of the future works.

Chapter 8

Conclusion

Write the conclusions.

8.0.1 Future work

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