



AMERICAN UNIVERSITY OF BEIRUT

SHEDDING LIGHT ON THE AS-IS VS. CUSTOMIZED ERP  
DEBATE: EXPLORING THE PRAGMATIC PRACTICES OF  
IMPLEMENTATION/CUSTOMIZATION IN A FMCG  
DISTRIBUTION COMPANY

by  
MAAMOUN ADIB EID

A project  
submitted in partial fulfillment of the requirements  
for the degree of Master of Business Administration  
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at the American University of Beirut

Beirut, Lebanon  
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# AMERICAN UNIVERSITY OF BEIRUT

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# ABSTRACT

Maamoun Adib Eid for Master of Business Administration  
Major: Business Administration

Title: Shedding Light on the As-Is vs. Customized ERP Debate: Exploring the Pragmatic Practices of Implementation/Customization in a FMCG Distribution Company

As Enterprise Resource Planning (ERP) implementation continues to grow worldwide and in the Middle East, the scholarly work on ERP is dominated by ‘success factors’, ‘culture change’ or ‘best practice vs. local practice debate’. The latter stream of research has been concerned with should companies customize the parameters of ERP-specified processes to their own procedures or should they adopt them As-Is. Surprisingly, although this debate rages on in the scholarly literature, it is rarely informed by empirical research which looks at the details of practices of customization. Research that does so and involves Middle Eastern firms is even rarer.

This research project takes on the latter gap in the literature and focuses on the study of customization practices up close in a Fast Moving Consumer Good (FMCG) firm in Lebanon *in situ*. The research focuses on the situated practices of customization during two critical stages of implementation life-cycle: *Adoption* (first experience with ERP) and *Upgrade* (maintenance of ERP after some time). These processes of implementation were analyzed based on the unfolding events and as experienced by key stakeholders to uncover key *practices* that were deemed influential in shaping the implementation outcomes.

The findings of the research pointed to three key practices enacted in the implementation process which recurred both during the Adoption and Upgrade stages: *decision making*; *test scenario development*; and *test script development*. Furthermore, the findings also pointed out how in each of these practices there is variation in three factors, i.e., *the amount of knowledge requirements*, *the degree of complexity*, and *the level of human resource (HR) involvement*. Overall, Decision Making during Adoption Stage appeared to be more high-level concerned with financial considerations. Interestingly, in the Adoption Stage, both the Test Scenario Development as well as Test Script Development practices appeared to be more focused on generating somewhat “theoretical” conditions of usage since there was little experience with ERP in the firm. In an interesting twist to the findings, the Decision Making practice during the Upgrade Stage appeared to be more focused on technical issues and pushed down to lower levels of the organization—no longer considered a strategic financial issue. In addition, both Test Scenario Development and Test Script Development practices in the Upgrade Stage were more focused on generating actual conditions of use so as to closely simulate the operational situation the firm has already experienced. These pattern of practices appeared to reflect greater knowledge gained in operating the ERP system in the firm and no longer being thought of as “theoretical” object. A major finding of the research is that both during the Adoption and Upgrade stages cross-functional coordination adds to the *complexity* of process of implementation. The other major finding is that, knowledge requirements and HR involvement are somewhat similar with a major nuance: during the Adoption stage, the focus is more on buy-in and

familiarization; during the Upgrade Stage, the focus is more on acceptance and minimizing disruption of existing operations running on an already customized process. Two contextual findings of the study are worth mentioning which influenced the shape of events in the Upgrade Stage: (a) there was little/no documentation of previously customized processes during the Adoption Stage; (b) the user personnel appeared to have left the firm and thus there was little continuity in the details of the customized processes that could be verified.

Overall this research project has effectively taken initial steps to de-black-box the practices of customization during the ERP Adoption and Upgrade stages. More importantly, it has provided a glimpse of key practices and the patterns associated with them. The findings of this research provide a productive platform for the follow-on studies that extend the findings and deepen our understanding of customization dynamics during ERP implementation.

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# CHAPTER I

## INTRODUCTION

### A. Industry Introduction and Automation

Most of the organizations in the FMCG industry use in-house developed application modules or small customized accounting application modules are primarily to keep track of their finances. However, in most cases these modules were very basic and require manual intervention to extract the right data input the right information in the hands of the upper management and the business owners. The larger the volume of sales that are being managed by those organizations the harder it will be for the organizations to efficiently manage their data and transactions with a small accounting module. The bigger the portfolio gets, the more complicated the data management will be. Moreover, the amount of transactions that are being stored on a daily basis is getting larger and larger which makes the role of the databases running at the backend of these accounting modules critical to the business health of the organization.

On the other hand, clients became more demanding. They require faster, more reliable and higher quality of IT capabilities. All these pushed the organizations to move towards adopting more technological features that could automate their lose processes and monitoring of these via KPIs of overall company performance to enable assessment in real time. FMCG companies have started to adopt latest technological systems in order to capture the orders at the instant the client orders the goods in the market directly through web portals or mobile applications and start processing these orders directly through the automated workflow processes internally from order management to issuing the invoices of the receivables.

In addition, the front end of the FMCG operations has dramatically been affected by these automated solutions through the inventory management system and that help locate the right products in the right expiry dates/lots and faster preparation of the batches for distribution. The loading and dispatching processes are also affected dramatically where the automated application modules show the invoices and list of goods that can be loaded in one truck that have the same destination. This is where the whole distribution cycle has become more efficient where the concerned parties can now locate their trucks at any point in time and know the exact time each driver took to complete his journey via GPS.

Because of IT capabilities organizations are now able to:

- Capture clients orders at the instance the sales representative record the orders in the market.
- Process these orders much faster internally
- Issue the needed invoices at the same stage.
- Locate data at the warehouses directly
- Decide the number of trucks needed to distribute each route automatically
- Track the distribution process and make more effective.

Moreover, the backend operations are also enhanced as of extremely affected by the capabilities of purchasing modules as well as the way transactions are now being recorded automatically from the different financial modules (Receivables, Payables, Fixed Asset & Cash management) and posted to GL where the upper management can know and review at any point in time the financial status of the organization by retrieving any financial statement needed automatically. The above trends have reduced the manual intervention, data manipulation, and with little or no “massaging” of data in excel sheets to extract financial information.

## B. Research Objectives & Questions

This research aims: (a) to document the pragmatic practices that a firm engages in to make a choice between As-Is versus Customization of ERP; (b) to document pragmatic practices of follow-on upgrade process; (c) to draw lessons learned from observing and reflecting rigorously on the latter two practices; and (d) to offer managerial insights into the management of the latter practices. The research approach is based on the practice perspective (Azad and King, 2008; Feldman and Orlikowski, 2012) and case study methodology (Yin, 2009). The overall objectives can be summarized as follows:

1. To find out the reasons on **Why** do organizations adopt a customization approach to implement an ERP system and to find out what are the basic issues that lead to customization decision.
2. To identify the process of how are decisions taken to proceed in the customization and how are the customization adaptation processes driven over the life time of the project.
3. To find out who are the people involved in customization decision making and on whose opinion the customization depends on.
4. To identify what are the practices of customization and how these driven unfolded during the life time of the project.
5. To verify how the customized ERP project was conducted and what was the high level cost burdens of the latter in terms of maintenance, support and upgrade.

We developed a research interview protocol to address the above research questions: One protocol focused on the Adoption Stage and the other focused on the Upgrade Stage.

Adoption Stage questions are as follows:

- Who are the people involved in taking the customization major decision?
- Who is the person who has the final decision in adopting a customized process?
- What are the main issues (internal workflow) that did affect the final decision?
- From which functional areas are the people involved in the decision making process?  
And how is coordination carried out on the steering committee level throughout the project life cycle?
- What are the actions/activities that lead to taking the customization decision?
- What are the steps and the data that were present to be able to facilitate the decision taking?
- How was the data collected from the operation processes?
- Are there any inter-related (cross functional) scenarios between departments? How are they managed during scenario preparations process and how the owner of the scenario is determined?
- What are the scenarios presented or tested to make the final decision of adopting a customized or standard process?
- How are customized processes tested on real environment?
- How did you measure if the results of the tested processes fit your needs?
- Were there any testing processes done by users from more than one business unit? Who was responsible for the final deliverable?

Upgrade Stage questions are as follows:

- Who are the major players in upgrading ERP implementations?
- What are the major challenges that face an organization while upgrading a customized ERP?
- Were there any alternatives to adopt a new ERP business process instead of upgrading the customized?
- Is the decision to upgrade the customized or adopt a new business process done by more than one functional unit?
- How are RFPs prepared?
- Who is involved in documenting the current processes before issuing the RFP?
- How were customized processes captured and documented?
- Are there players from more than one business unit involved in documenting a single customized process? If yes, how are communication managed?
- Who is responsible on preparing the testing scenarios?
- How many iterations on the UAT are done? And how was the feedback on a failure/success of testing iterations taken and hence to conduct a new iteration or not?
- What was the role of the steering committee in the customized ERP upgrade project?
- How was testing managed when there are processes interrelated between more than functional areas?

## CHAPTER II

### LITERTAURE REVIEW

It may not be an exaggeration to say: “We all know that nobody builds their own systems anymore. It just isn’t an option; life is too confusing now, so why reinvent the wheel?” (S.V.Scott, 2003).

As the organizations’ way of work and processes are getting more complex with the increasing demand to respond to the changing market conditions and increasing competition in the globalizing world, developing in-house application software that is fitted to the unique firm processes is less and less becoming a practical option.

The managing and controlling of Information Systems project such as implementing an ERP is nowadays a qualitatively different activity from developing a customized systems of prior era (Quattrone, 2006). The software code is completely provided by a third party and thus firms face a different dynamic of implementation than they used to with the custom-developed systems. Moreover, with increasing demand for centralized data and analysis based on data warehouses, an ERP is becoming “part of the company furniture” (Williams, 2012). Nevertheless as many organizations have found its effective use over time is a challenging prospect even for the most sophisticated firms with IT-savvy departments. One of key issues that proves continually challenging through the life-cycle of ERP is the adoption choice between As-Is ERP vs. Customized ERP. The research and trade literature on ERP implementation is replete with anecdotes that how vendors praise the As-Is approach while almost no organization adopts ERP As-Is and often engages in some level of adaptation and customization of the standardized organizational processes within the ERP. That is because often ERP’s standardized business processes are too rigid and too different



from existing processes of firms. Thus, adaptation/customization becomes a matter of “how much” rather than “if” (Benders, 2006).

Obviously in a lot of cases some of adaptation are considered minor. But regardless of minor or major, what is interesting about the ERP research and trade literature on the topic is that often it provides little evidence that is based on rigorous documentation and reflection to inform this debate—As-Is vs. Customization. Most organizations take the major decision to either change their business process to fit the standard software processes or move into customizing the software process to fit their way of work or business with little evidence to base such an important decision on. In other words, the choice set has become axiomatic and now it is taken-for-granted.

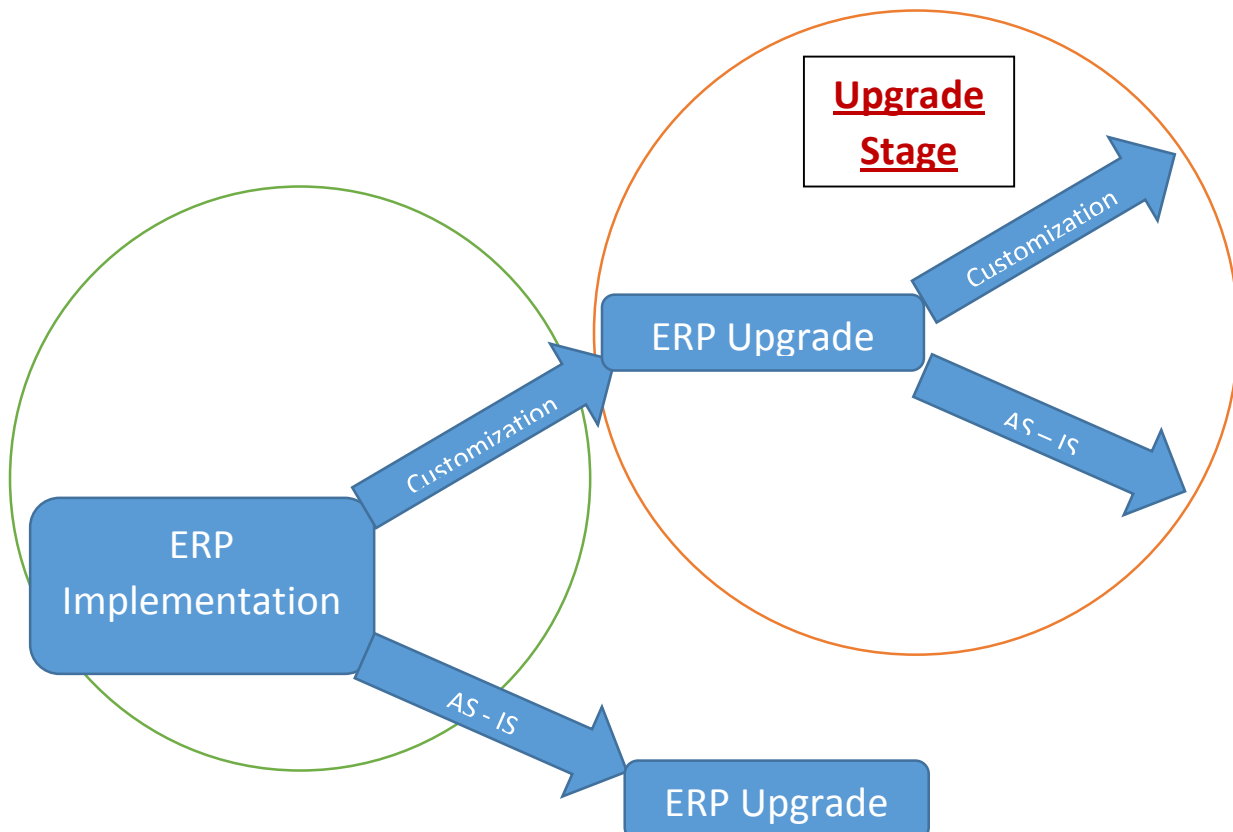
Indeed, a search of online databases on ERP implementation confirmed this perception. The most of the ERP articles focus on the management of ERP adoption, organizational outcome and critical success factors. But, in fact none that the author is aware of has documented and reflected rigorously on the process of choice initially or later follow-on (life-cycle of ERP) on the issues of As-Is vs. Customization—how firms practice the process of customization and upgrade with its minutiae remains black-boxed so far. Therefore, our starting point is as follows: first, the actual practices regarding decisions by who why and when and what of this choice at the initial stage are little unknown; second, the actual practices regarding the follow-up decisions by who why when and what are also little known. Thus, this MBA research project takes on to address this gap in the literature through an in-depth case study of a FMCG Distribution Company located in an Eastern Mediterranean country that has gone through this process.

## CHAPTER III

### CONCEPTUAL FRAMEWORK

Since the research paper is shedding light on the standard vs customized processes in an FMCG firm, our findings were concentrated on the two key stages that are often followed throughout in most ERP implementation projects.

- I. The first stage involved the Adoption of ERP and its customization, when an organization wanted to move from an in-house developed system to a full-fledged, of-the-shelf module.
- II. The second stage involved the Upgrade of the ERP when the implemented version was updated to the latest version so that it would be up-to-date with vendor's latest releases.



**Figure 1.** Conceptual Framework

Our focus in this research was on a deeper understanding of details in the such projects especially paying attention to the Why, When and Who of adopting a customized vs the as-is standard.

IT departments usually approach to ERP implementation in any organization follow the industry conventional wisdom.

That is why most of these IT departments try to follow the international standards and implement ERPs that basically cover the commonly known processes, e.g.: HR, Procurement, CRM, etc.... Some of the firms are obliged to implement such modules in order to be ISO certified and others see a chance of making their whole function more efficient by automating it on following the international standards. However, in some functional areas where the organizations have the concept of “We do things in a different way”; we are specialized in some functional areas, they try to customize some of the modules to adapt them to their processes and not adopt the standard ERP processes as-is.

This dichotomous framework was used to guide the data collection methodology, which is described in the next section. The data are used to examine how the ERP implementation and upgrade projects evolve. We do this by identifying how are decisions taken to customize local processes within the organization, who are the people involved in the decision making on customization processes, and how are process validation activities carried out to ensure that those customizations meet requirements of the firm’s core procedures and methods of doing business.

## CHAPTER IV

### METHODOLOGY

This work is more an exploratory research we aim to identify potential practices that have rarely been analyzed on the extant literature. Indeed, the literature will show that the majority of ERP research focuses on local-global dichotomy debate paying little paying little attention to practices of ERP customization. Our research approach is consistent in the (Yin, 1990) open-ended “focused interviews” with the interviewees.

The research methodology adopted in this paper is based on the case study approach. The intent behind selecting this approach is to answer the research questions concerned with the “how” and “what” questions of the research (Yin, 1990). Furthermore, this approach was also selected as the preferred method since it enabled the researcher to bring focus to the contemporary events, which are being studied in this research (Yin, 1990). The focal case is a FMCG organization operating in Lebanon.

#### A. Literature Review

We reviewed a major sampling of articles, reports and case studies that address the ERP implementations in general and ERP customizations in specific. The literature that targets the customization processes of an ERP module often discusses it at a high level and focuses on how customizations ended successfully. We on the other hand focused on de-black-boxing the whole process of ERP customizations. In other words, the literature on this topic has rarely addressed or dealt deep on the micro-practices of customization. .

## B. In-depth interviews

I planned to interview with key people in the corporations where I have detailed their knowledge of customizations of the ERP during implementation and during the upgrade. This data collection process was essential in coming up with the findings that will be presented in later. The interviews were held with the key decision makers who have influenced the major decisions in the ERP implementation life cycle. The organizational roles of interviewees in the case studies are as follows:

- Project Sponsor
- Internal Project Manager
- Functional Key Users
- IT managers
- Business Development Director
- Operations Director

I conducted face to face interviews, especially with the executive level employees in the firm. However, I effectively conducted brainstorming sessions with the key user and the functional users. The most important information during the data collection process came from the business development director who was present at both phases of ERP implementations project and lived “through” most of the stages of the ERP implementation life cycle. In addition, his insight into the customization activities was invaluable since he dealt with both the functional users and the steering committee decision makers in both phases.

In addition, the interview with the IT consultant of the firm gave me a broader view of the ERP implementations projects since he has gone through several implementations in many

business sectors in Lebanon, the Middle East region and in the USA. He was able to highlight specific and general aspects of ERP implementation in relation to the case study firm, regional market, and the global market.

### C. Personal experiences

My personal experience in ERP implementation includes projects from several industries. In one firm I was involved in implementing an as-is ERP system in a media firm in the Middle East area where the firm was operating on in-house accounting module and directly have chosen to move to a full fledge ERP module. On the top of that they were developing a fresh media booking system to be integrated with the order management tracking of the ERP. The knowledge of this experience was essential to differentiate between the what is involved in adopting the standard modules of the ERP system as-is and how that would differ from customizing large number of processes in the Adoption Stage.

In another firm due to my involvement I was able to collect data from was targeting a standard media booking system as a vertical solution to be integrated with the standard modules of the ERP horizontal processes. This experience gave me insight into how customization of the workflows of an ERP can be compiled with a vertical software solution and how the decisions and testing were carried out within such projects.

In a third firm my experience was the case study organization. The upgrade project was initiated on an ERP environment with a full-fledged ERP system running with customized process that were implemented. This was done to make sure there is less impact on their FMCG culture. This last experience was the major source of information for my findings since it

reflected the current situation of the firm. My personal experience proved invaluable but had to be validated through information provided by other interviewees.

In a broad sense the research adopted a “pattern-matching” strategy in order to define the outcomes that are presented, and their causal relationship to the antecedent conditions of the research (Yin, 1990). Various analytical techniques were used, in order to categorize the data so as to draw the conclusions from it, such as flow charts, tables, and process diagrams (Newman & Robey, 1992).

## CHAPTER V

### CASE STUDY

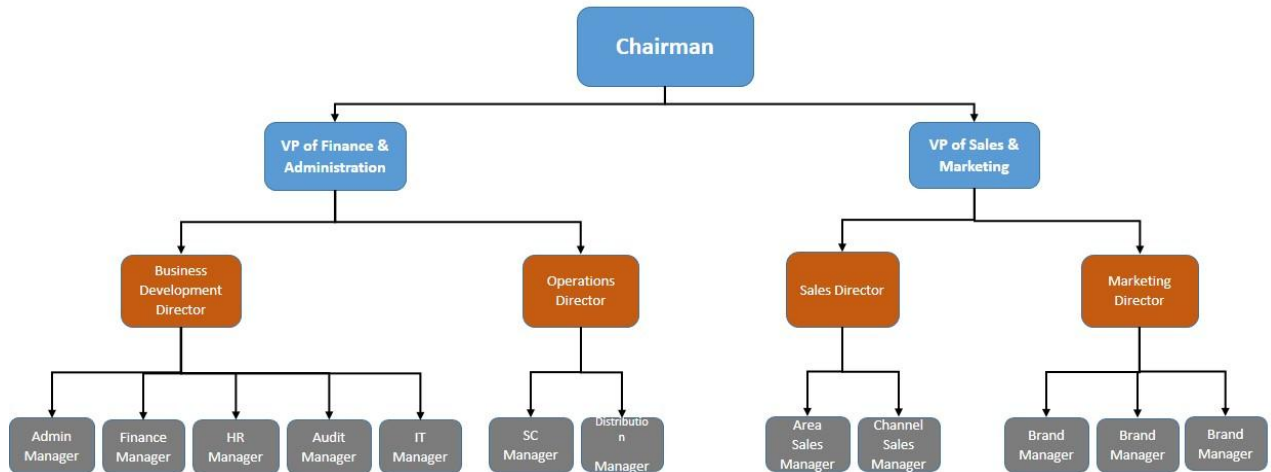
The case study presented in this research project is discussing the ERP implementation processes when it comes to customization of certain processes in the implementation process. Two phases of the ERP implementation are tackled in this case study. The first phase, Adoption Stage, passes on the “how”, “why” and “when” the organizations choose to implement “a customized process” rather than adopting an “As-Is standard process” in the initial stages of the implementation when the organization was transforming from a legacy in-house developed system or Excel sheet into a complete full-fledged ERP module with all its horizontal and vertical modules as applicable. However, in the second stage, Upgrade Stage, we discuss how the organization goes through the ERP upgrade project. Usually upgrades projects are mandatory to go through due to the support constraints that the vendors impose on customers.

The firm that was studied in this case study is the number four FMCG distributor company in Lebanon, the official reseller for many local and international brands. It has a team of over than 500 employees that are distributed between sales, marketing, distribution, warehouse management and internal operations (Finance, Administration, IT & Accounting). The firm has a full-fledged ERP module running at its premises that covers all its business/functional areas. We can say that the organization is fully automated from the time the sales orders are collected from the clients until the good reach the market and distributed to the clients.

In this section of the case study we describe the internal structure of the organization and how each department is automated processes function: (a) standard implemented process; (b) customized ones to fit the organization needs.



## A. The organization Structure:



**Figure 2.** Organizational Chart

### a. Sales & Marketing

This unit is responsible for all the operations that are related to stakeholders outside the organization. These stakeholders can be summarized by the organization suppliers, clients and advertising agencies.

The sales department consists of more than 150 employees distributed over different sales channels. Each channel has its own leader and they all report to one sales director. The sales channels are categorized according to the type of clients they do serve.

For example there's the cash sales and credit sales. And in the credit sales department the clients are categorized into wholesales, supermarkets, pharmacies, etc.

On the other hand, the marketing department consists of brand managers each serving the marketing needs of a set of brands that are related with one supplier or type of SKUs. The brand managers report to one marketing director.

Both the sales and marketing directors are reporting to the vice president of sales and marketing.

b. Finance & Administration

This unit handles all the details related to the internal operations of the organization. It consists of the following departments:

- i. Finance department
- ii. Accounting department
- iii. Administration department
- iv. Human Resources department
- v. Information Technology department
- vi. Internal Audit department
- vii. Supply chain
- viii. Warehouse management
- ix. Distribution

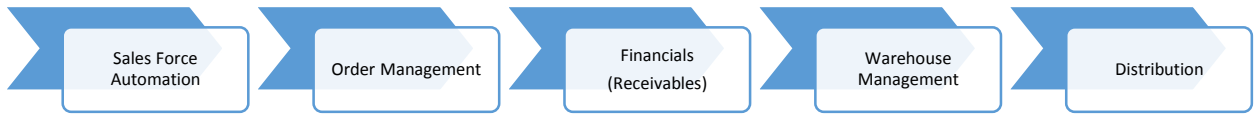
This organizational unit is usually most affected by changes in the ERP since the ERP covers most of their processes whether it is fully automated or semi-automated (i.e. when the ERP is not fully implemented with all its modules).

## B. Using Different ERP Modules

As mentioned before, the core modules and functionalities of the ERP are being used by the Finance and Administration department where their core processes are fully automated. Since the company's finances are critical to its health the financial modules and the general ledger modules are most heavily used. These modules include:

- General Ledger
- Receivables
- Payables
- Cash Management
- Fixed assets

The order management modules which support the Sales department is tracking the daily sales/orders. However, this module is completely managed by the Billing department which in the organization hierarchy is part of the Finance department too. Another module titled Sales Force Automation which runs on mobile devices and is integrated with the order management module is the primary system that supports the daily sales operations. It was designed in order to provide an additional layer of data validation on all orders by the finance team before any Sales Order is invoiced and to make sure its impact is propagated properly into receivables.



**Figure 3.** Downstream cycle

When it comes to the upstream system, the Purchasing/Procurement module is the primary system that supports the process that has to do with Suppliers, Buyers and Vendors. It further helps manage the processes that have to do with Purchase Requisitions, Orders and following up with all the shipments until they are received in the warehouses.



**Figure 4.** Upstream cycle

On the front end of the operations there is the Warehouse Management and Distribution modules which cover the Inventory Management and Distribution processes of the goods from the time the invoices are issued until they reach the clients.

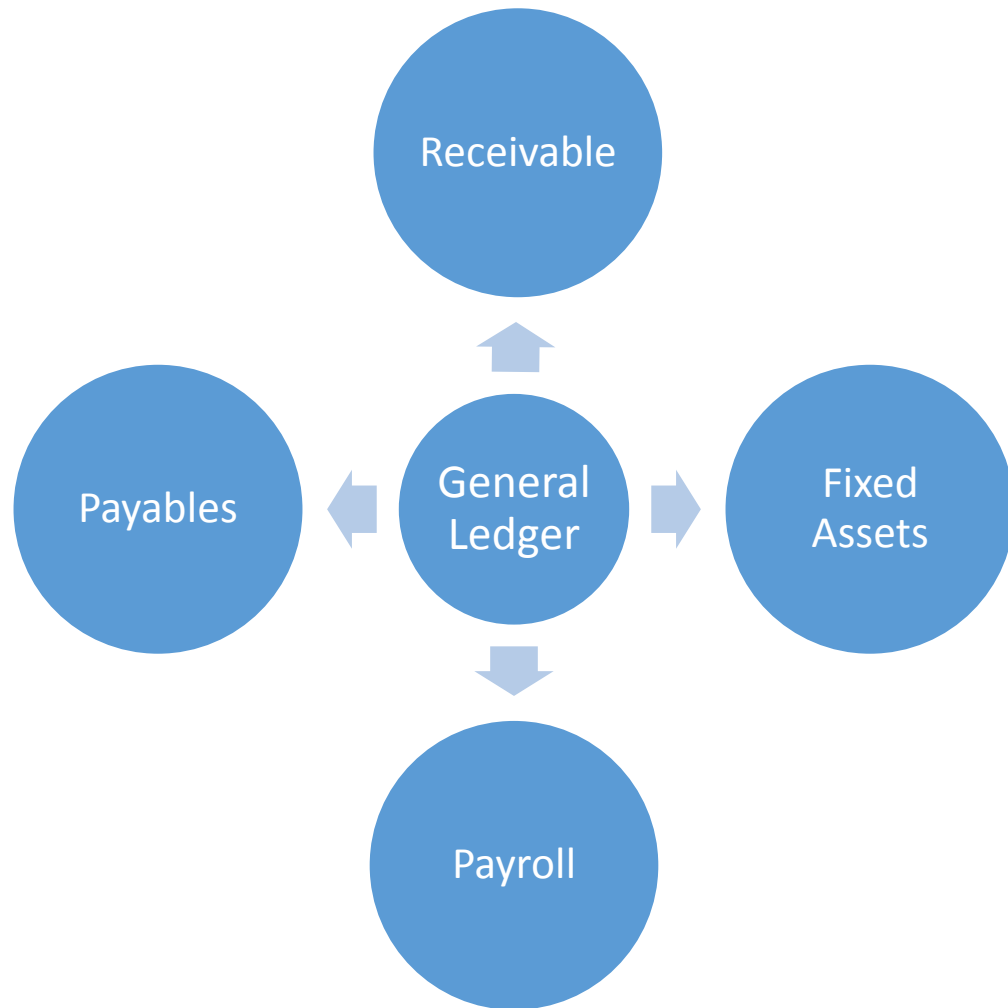
The Business Intelligence module runs on the top of all these modules to provide data for the end users in a friendlier manner. This module is mostly used by the marketing

department in order to help them plan and forecast for their yearly budget and decide on promotions to do with specific SKUs when needed.

Finally, the Information Technology department acts as the back office for all the internal processes where they support and maintain the flow of data in the daily operation and develop/enhance the functionalities of certain modules when needed.

### C. Functional Areas Affected by ERP Implementation or Upgrade

Since all the core business units processes are automated, they are affected by any change in any of the modules that experience transactional changes on daily, weekly or monthly bases. However, there are some departments that are affected more than others based on the process-dependency. Those departments are mainly the Finance, Accounting and the IT departments. Effectively the magnitude of this change can be understood as follow: the daily transactions were being recorded in a standalone accounting system, manually or on Excel sheets now they are being recorded in a full-fledged ERP system with five different financial modules. This constitutes a major change in the work procedures of the end users.



**Figure 5.** Financial cycle

In addition, users who are not familiar with the difference between a single accounting module (debit & credit transactions) and a source-based financial modules system (one transaction entered at the receivables/payables level and system automatically decides the credit and debit accounts at the GL level) will suffer a lot in such changes. Even in the upgrade project from one version to another a lot of changes will be experienced via the screens (look and feel) and the way different transactions are recorded.

On the IT side, their core work will change from development and maintenance of data into support of the ERP modules and maintenance of the flow of its processes.

#### D. Summary

Through our data collection process, we were able to come up with some common patterns that any FMCG organization expects to go through when it comes to taking major decisions in customization of automated processes to fit the organization; business processes and how these customizations are managed during the life cycle of the ERP system from Adoption to Upgrade Stages. These findings will be present in the next section of the thesis.

## CHAPTER VI

### FINDINGS

In this part of the thesis we will be presenting our findings covering two stages: ERP Adoption and ERP Upgrade. The framework presented is generic in the sense that it lacks details pertaining to a specific ERP module. This is due to the fact that the process, as a whole, is seen to be almost identical amongst most of the international ERP modules. These will be discussed in further detail when presenting examples in the rest of this chapter.

- I. The first stage (Adoption) covered the area related to the customized processes that were adopted at the initial stage when an organization wanted to move from an in-house developed system to a full-fledged, off-the-shelf ERP system.
- II. However the second stage (Upgrade) covered the Upgrade Stage of the ERP when the previous implemented version was updated due to the upgrade; which was triggered by vendor's new releases.

Through our research findings we were able to discern three primary patterns that appeared to be repeating throughout the two different Stages of the ERP implementation. These patterns are summarized as follows:

- a) Decisions Making Practices: High level decision-making practices throughout the life-cycle of the implementation
- b) Scenarios Practices: Scenarios development practices that were prepared throughout the implementation phase for testing purpose.
- c) Test Scripts Development Practices: The scenario testing practices that was done on the customized modules to ensure that the system upgrade would function properly.



During data analysis period we were able to add another dimension and offer some reflections. That effort spent in each of these practices appeared to be different by the stage..

## A. ERP Adoption:

### a. Decision making practices:

In this stage all the head of departments appeared to be involved in the decision making process. These are the departments that are “touched by” in the automated process of the ERP. The decision making starts by forming a committee of the above mentioned people that are responsible for giving its feedback to the company principals. Head of IT and the CFO appear to be the two main drivers in the customization decision. They are assigned as the project managers. The head of IT is charged with reviewing the customization “load”. At the C-level (e.g. Finance) the CFO is involved in the spending decisions to do with this. In some organizations that have more elaborate hierarchy the CFO or financial controller are the main players in the decision making process due to the cost of implementation. After that the kick-off meeting for the implementation project is initiated.

Starting from this phase the main players on the project will be the project managers. The steering committee will be meeting whenever there’s a debate on a certain decision between the project managers. Meetings are scheduled with all the functional departments in order to collect the high level requirements. Each key user starts narrating the processes he is involved and these are documented by the project managers and implementation team. Parallel to this process the project managers will be validating the above mentioned processes.

In addition, new features that the key users have identified as candidate for automation since they are being carried out manually are documented as well. After all the requirements are

collected, the implementations team takes a period of time, which is part of the project plan, to study those requirements in details. They map those collected requirements to the ERP standard processes. This will provide feedback to the project managers on which processes can be implemented as the ERP standard processes and what are the other requirements that need customizations to be implemented.

Then, the implementation team studies the requirements focusing on those that did not fit the standard ERP processes in a greater detail. They spend a few working days on site with the key users to monitor the way these process are being managed. They document the full process from the minute the data is fed to any vertical modules until it ripples-through the financial records or the general ledger. A feedback with a full proposal on how these processes will be customized is developed and sent to the project managers for evaluation. The project managers now study the suggested customization proposed by the implementer in details to know how what percentage of it fits the initial requirements and its financial impact on the overall project. The financial manager is usually more interested in how each customization will impact the GL accounts. Accordingly a final feedback is sent to the steering committee in order for the final decision on either to “Customize” or AS-IS is taken. In some other companies customization decision may be affected more by a culture of "we do things in a different way". This culture is the result of the perception that “we want to be a leading edge in our area; we do business differently and that’s why we customize because there’s no solution out there that understands the way we drive our business (us being different).”

Hence, overall decision making process the accounting manager, chief accountant and the IT manager are the main players involved in taking customization major decision. But, the final

decision is always restricted to the steering committee, mainly the VPs in the organization. In the case study or organization they are the owners of the company who head the internal operations, as well as sales and marketing departments. They evaluate all the feedbacks received from the steering committee and from the project managers and then they take a final decision in adopting an As-Is standard ERP process and change the way the internal business processes are made, or customize the ERP process to match the current firm business processes.

In most of the organizations, the steering committee is usually formed of director level positions because Managers either do not have the authorization to make such major decisions and if they do they hesitate to make that call because it has a high impact on the long run, so they try to escalate the decision to higher level.

A few critical processes that are identified are then evaluated in details to see how much time that process is taking currently to implement. The evaluation decision usually goes according to the following steps: (a) assess process cycle time based on customization; (b) this is multiplied by the average cost of employees in the affected grade to know by how much amount the cost will be deducted.; Thus, initially often the labor cost reduction is taken into consideration and cost of implementation/setup only. Rarely do organizations look at the downstream cost of the customization or the upgrade cost which is often the long term cost.

In the above decision making practices we were able to find out that the Human Resources department involvement at this stage was low. Only head of departments were involved. All decision to customize or implement the process As-Is was taken by the Steering Committee.

On the other hand, the decisions making process at the time the ERP was adopted appeared to be more complex. The project managers had to provide a detailed feedback on every process

whether it will be customized or implemented As-Is. As a result, we deem the decision-making process having higher than normal complexity.

On the knowledge side at the Adoption Stage the intensivity was minimal especially while making decisions to customize or adopt the process As-Is. Neither the key users nor the Steering Committee appeared to be knowledgeable about the ERP standard processes.

b. Scenarios development practices:

At this point, the scenarios development will start. The first data collection process is based on real time monitoring of the way transactions are conducted. At this stage the key users and the IT manager are the main stakeholders. The next step an “owner” is assigned to each process by the 2 project managers. Process owners’ selection is usually based on who is currently the key user on this process. If there is a cross functionality on a single process, the person that is working on the last phase of the process will be responsible for the deliverables of the whole process. Usually at this stage (Adoption) the Accounting/Financial users are the process owners since most of the processes will be impacting the GL and they need to validate the final results.

The key users will be given a time frame to complete their scenarios. The IT and Financial manager will be following up with each process owner to know the progress. Most of the times in this stage the project managers develop most of the scenarios while coordinating directly with the users. Key users rarely know the difference between two different scenarios in the same process. The users do not necessarily know the details in the final deliverables in the scenarios. Thus, scenarios at this time are mostly high level ones due to the fact that users do not know the impact of each scenario on the ERP modules. Indeed during this period as process owners complete their scenarios, a meeting is held to discuss the progress on each scenario and give

general recommendations on how to tweak or continue the current work. These recommendations are considered a major input into the deliverables.

After all the deliverables are collected they are validated by the project managers. Then they are passed to a second update iteration by the key users if needed.

Key users are the main stakeholders in this practice. However, their involvement in preparing the scenarios is relatively low taking into consideration that the scenarios produced are somewhat high level. The organizational level of the user involved in this practice is at middle management and key users only. The C-level and directors level involvement in this practice is very low.

In addition, since most of the scenarios were prepared at the high level and did not go into details, there were is low complexity in the scenario development phase.

Since it was the key user first experience dealing with a full-fledged ERP, the knowledge intensity at this stage is very low. The process owners spent a lot of effort and interventions by the project managers to finalize their process scenarios.

c. Scenario testing practices:

At this first stage testing the scenarios is considered as “testing theories that have never been applied before”. That is because the ERP is not yet implemented and the scenarios are prepared according to what is being currently done in the business without knowing what or how exactly the processes will be after the ERP implementation.

For the customization instance the sequence is more robust than the standard functionality. Testing is always divided into parts. One is technical which is conducted by personnel with

technical background and the second is functional conducted by functional personnel, technical personnel or a combination of both.

The testing is launched first with the technical part where the implementation team after the setup. The implementation team feed the data into the system and monitor its flow in each process until it reaches the final stage. They only validate that the customization has no technical errors and test the results on dummy data. The internal IT team will play a minor role in this technical activity where they are only involved in case they are technically customizing any process. Hence, the IT team members have to be knowledgeable with the programming languages of the implemented ERP. That is why hiring some specialized technical resources to join the IT team is done prior to the project kick-off meeting. In this case the internal IT team will be responsible for the outcome of these customized processes that were customized internally and not by the implementer.

Once all the technical testing processes are done the functional testing processes will be launched. A room is setup with workstations and access to the UAT environment for the user to start testing. All the users are assembled in this room in order to start launching the scenarios. Now each key user will start testing the part of the scenario he's responsible of. Most of the processes are cross functional and more than one key users will be doing the testing on a single process. But the "Process owner" who is giving the final sign off on each process will be the single key user who was assigned in the scenario development process. As discussed in the previous stage, the Financial or Accounting teams or in most of the cases are the final owners of the customized processes that is because they are validating the outcome of these processes and how it is affecting the desired accounts in the GL. In addition, this is why they always have the privilege to sign on the acceptance or reject the outcome of any testing scenario. In addition, it

sometimes depends on the influence of the selected department within the business and this is where the details of the process can go from macro to micro level.

The IT team, implementation team and the consultants could be present at these testing workshops, since most of the users are new in dealing with this new interface of the ERP and the testing is considered as an initial training session for those users. This is where the implementation team and IT team guide the key users on how to use each screen in the ERP. At the end the “process owner” should either sign an acceptance of the customized process or give his feedback on why the process was not tested.

After all the workshops are done, the implementation team start studying the feedback received by the users, the decision whether to do another iteration or just fix the reported errors on the same iteration is taken in cooperation with the project managers. The reported bugs are fixed on the same iteration or a new iteration is built and another testing process is done by the key users for those specific processes that were fixed.

Scenario owners doing the testing are primarily all the key users of the functional processes. Their involvement at this stage in the testing process is low since it is more a training session on using the system more than a full testing of the scenarios.

Testing the scenarios in the adoption phase was very complex practice. The reason for this complexity was the fact that the key users were familiar with the forms and processes of the ERP. Most of the times the IT department has to interfere to complete that testing and show the key user how to feed the data into the system.

Moreover, during testing of the Adoption Stage the key users and project managers' knowledge of the ERP standard processes is very low. It will increase as the implementation project evolves and throughout the life-cycle of the project.

## A. ERP Upgrade

### a. Decisions Taking Practices:

Organizations do go through ERP upgrade projects often because they risk losing the international support from the vendors if they will continue using the old version of the ERP. In this phase it is only the head of departments that will be affected with the upgrade that are included in the Steering Committee of this Upgrade Stage.

However, when it is an Upgrade project it is "owned" by the IT department. From a business point of view the management does not differentiate between Customized and Standard process. They just need to successfully upgrade and keep the business on going in a stable manner. The major decision makers at the Upgrade Stage are the IT department and the technical consultant and that is why they are named as the 'project managers' in this phase. The Steering Committee is only involved when there is a decision to adopt a standard functionality or upgrade the customized process As-Is.

One of the main challenges that were faced in the upgrade phase was to identify where the customizations had been performed in each module in the Adoption Stage. Another challenge was that most of the users that were present during the Adoption left the company and there was no documentation of the customizations done at the Adoption Stage. In addition, the users that are still present since the initial implementation are now used to working on the ERP without



bugs on these customized processes and were not aware of the fact that these were customized processes. Moreover, no standard naming process for the customization was used to document them and so that they could be easily identified at later stages.

At this stage, the IT manager initiates the data collection sessions that are designed to collect and document the processes for each business unit. Users that work in one functional unit attended one session. During these sessions the IT manager and the consultants started collecting the details on how business is conducted. These findings provided some clues on whether each process is customized or implemented As-Is in the Adoption Stage. Later all these findings were mapped to the ERP standard processes to find where the customizations had taken place.

After identifying the customizations the consultant started studying the difference between the customized modules and the new version of the standard processes. Then a “proof of concept (POC)” was prepared either by the consultant or by the implementation team on each customized processes and how can it be implemented on the As-Is version of the module. Those POCs are presented to the Steering Committee in order for them to make a decision according to the presentation and project managers’ feedback on whether to adopt the ‘standard process’ or upgrade the ‘customized process’. In the case of implementing the ‘standard process’ the implementation team follows the same path. While in case of upgrading the customized module to fit the new version, a more in-depth technical study is performed by the IT manager to access the 3 issues related to each customized module (Forms, Reports and Tables). A stand-alone plan is done that is later embedded in the full project plan on how the upgrades on the customized modules will be carried out. And as the implementation evolves, further customizations are discovered throughout the life-cycle.

One example was a customized process called “Shrink Wrap” module where a full documented process that was prepared and applied on the standard functionality of the “Bill Of Material” (BOM) process to compare the results in terms of time, resources and output variables. That is how the decision was made to adopt the ‘standard’ or stay on the ‘customized’ As-Is and just upgrade it.

In the Upgrade Stage Steering Committee involvement is somewhat less than before. They only get involved in the stage after the POC results to decide whether it is an upgrade of the customized or implement the standard process instead.

The only decisions that needed to be made are the ones related to the upgrade of customization or implement the standard process. This was not complex due to the “Proof of Concepts” that were conducted at that stage and smoother resulted in decision making practice.

On the other hand, in the Upgrade Stage knowledge intensity may have been higher than the Adoption Stage especially for the IT manager and the consultant. Some of the Steering Committee members were knowledgeable with the ERP processes too since they had gone through the Adoption Stage.

b. Scenarios Development Practices:

In this case, we found out there was rarely any documentation on the previous customized process. As the list of processes is identified, the scenario development process proceeds with project managers as the main driver of scenario documentation. Usually scenarios are done by many departments. As a change the way things are being handled in a single process. Most of the users from the functional units are engaged in this stage. They often support or oppose. It is rare to find users who simply remain neutral.

An owner for each scenario is assigned and a session is initiated for all the key users to explain the way the templates will be dealt with. A time frame is assigned for all users to finish documenting their scenarios. Follow up sessions are conducted in order to move ahead with the scenarios. Users are provided with instructions to refine the scenarios and make render them more relevant.

Subsequently the deliverables are collected and validated by the project managers. It needed a further iteration of the scenarios is performed. The resulting scenarios are detailed, since the users are already familiar with the system. Indeed, these scenarios are documented down to the “atomistic” step that is done in each process. As a result, whenever there are differences in steps within the same process a scenario is split into multiple parts or even multiple scenarios.

Subsequently, the results were incorporated within the RFP so that the implementation team could clearly identify the workload and its cost. The clarity of the RFP as well as the level of details help reduce risks of ERP implementation.

In some organizations with ISO certification, the departments maybe responsible for their own documentation. In such cases, all the documentations are relevant, but the critical issues at a high level so that the person who is preparing the RFP can identify which process need to be documented in the RFP. In other organizations where there is little or no documentation, then a unit needs to be charged internally to document these processes in order to list them in the RFP. This organizational unit is often either the IT or the Finance department.

In this ERP Upgrade Stage, key users develop more detailed scenarios. Indeed, that is why their involvement in the scenario development practice is considered to be higher than before.

In addition, preparing the scenario for each process in the Upgrade Stage are very complex. Each process may have many scenarios depending on the variability of the process. As such, this is considered a practice in the higher level of complexity.

Most of the key users appeared to be knowledgeable with the flow of each process. Thus preparing the scenarios for those processes appeared to be easier for them. The knowledge intensity in this stage was considered to be higher than before.

c. Scenario Testing Practices:

Testing practices are split into two types of testing: Technical and Functional. Technical testing is done by the implementation team, IT team and the consultants. When the technical implementation is accomplished the testing phase is launched.

Testing scenarios were prepared by the key users after a training session was conducted for those users on how to develop these scenarios based on unified templates provided by the consultant. Each user was responsible for developing and testing his part of the scenarios especially when there were cross functional scenarios to be tested by different business units. Subsequently, the implementation team began doing the initial testing for each process. This initial testing is based on the input of the initial scenarios proposed and developed by the key users. These testing practices are done fully on all the process but following only one scenario for each process. IT team and consultants attend the scenarios testing sessions to validate that the flow is conducted in the process. Once all the technical testing is finished and successful the functional testing commences.

Functional testing sessions are performed per functional area. The processes of a single business unit are addressed in one session. Prior to that, IT team prepares several workstations with access

to the testing data. Each key user starts testing the process he is assigned. Since most of the processes are cross functional, more than one key user is involved in doing the testing on that process. However, the acceptance is provided by the owner of the process. Moreover, at this stage the Financial/Accounting users validate the processes that affect their modules.

IT team and the consultants attend the scenarios testing sessions to validate the process flow. Since most of the users are knowledgeable with the forms they are used to working with the testing is performed by them. Subsequently, the implementation team start studies the feedback provide by the users. The decision now whether to do another iteration or just fix the reported errors is taken in cooperation with the project managers.

From a technical point of view there are usually 2 iterations (with 3rd as potential). Subsequently, the go-live date is established.

Steering Committee is involved in high level management decisions, often driven by financial consideration. In case there is a change request and/or if there is a major decision where two sides are not agreeing on the way to proceed the steering committee is referred to in order to facilitate the issue. Hence, it is more of a decision to do with funding. This is especially so if they find out that there's something not documented and a change request need to be issued.

Testing is more extensive and detailed in the Upgrade Stage. Hence, the involvement of the key users appears to be more intensive than that in the Adopting Stage. This is because, they are doing the testing of the scenarios and giving the feedback on the potential errors of each process.

In the Upgrade Stage, the testing appeared to be smoother with less complexity in the testing activities. The key users appeared to know which portion of the process they were responsible for and as a result the IT involvement appeared to be minimal.

Also, in the Upgrade Stage users' knowledge appeared to be much higher where they are sure of what to test and how to test each scenario of the processes. The only gap in their knowledge appeared to be in the new adopted modules.

## CHAPTER VII

### DISCUSSIONS

#### A. Case Study Contributions

As was explained in the earlier literature review, most research has been targeting customization at the macro level on how the management of ERP adoption, organizational outcome and critical success factors. However, rarely has any search documented the process of choice initially and follow-on (life-cycle of ERP) on the issues of As-Is vs. Customization—how firms practice the process of customization and upgrade with its minutiae remains black-boxed so far. This research paper's contribution is in exploring the how, why, who and when that goes on doing customizations processes in two different stages. The first is while adopting the ERP and moving from in-house developed module into a full-fledged ERP system and the Upgrade Stage that takes place a period after the initial implementation.

Through our analysis of the interview data three practices were discovered in both the Adoption and the Upgrade Stages of the ERP. These practices are summarized as follows:

- Decision Making practices
- Scenario Development practices
- Testing Script Development practices

Decision making was always a burden of effort or time or financial on the company whether on Adopting or Upgrading stages. For example the Steering Committee is affected by this. This is often a major burden on the organization at director level positions because managers either do not have the authority and if they do they hesitate to exercise it because often they escalate the

decision a higher level in the organization. Decisions making practices were always based on the project manager’s feedback to the Steering Committee where the complexity, knowledge and human resources involvement varied between Adoption and Upgrade Stages as highlighted in the table 6.

	<b>Decision Taking Pattern</b>	
	<b>Adoption Stage</b>	<b>Upgrade Stage</b>
<b>Human Resources</b>	High involvement based on number of people involved.	Low involvement since few decision
<b>Complexity Intensity</b>	Very high since it touches on many business processes	Low, because it is based on the results of POC
<b>Knowledge Intensity</b>	Knowledge level low	Amount of knowledge in the ERP process after few years of using it is high

**Figure 6.** Decision Taking Pattern Dimensions

The scenarios development practice is usually essential because it highlights potential difference between the firm process and the As-Is process of ERP. Thus, if one scenario fail this lead to negative feedback on the success of the test as a whole. This is fundamental in this stage not to miss any critical scenario. The presence of a consultant at this Stage is often useful which the case was in the Upgrade Stage in the case study firm. Moreover, in the Upgrade Stage the lack of previous documentations about the customizations and the absence of the key users who were there at the Adoption Stage made the task of identifying the customized processes in the ERP very challenging stage.

The Scenario Development practice was mostly technical during the Adoption Stage and more functional in the Upgrade Stage where the level of intensity in the complexity, knowledge and availability of the human resources tended to be different as highlighted in Table 7:



<b>Scenario Development Pattern</b>		
	<b>Adoption Phase</b>	<b>Upgrade Phase</b>
<b>Human Resources</b>	Low involvement due to gap in knowhow.	More people are involved in developing the scenarios.
<b>Complexity Intensity</b>	Low complexity, scenarios are more at the macro level.	High complexity in developing the detailed operating scenarios
<b>Knowledge Intensity</b>	Amount of knowledge in developing scenarios can be considered small.	More knowledge required from users involved in preparing the detailed scenarios.

**Figure 7.** Scenario Development Pattern Dimensions

Scenario Testing Practices were split into technical and functional testing where the first was conducted by the implementation team and the IT team at different times. The functional testing was mostly performed by the key users and process owners. Both testing practices in the Adoption Stage were performed on dummy data fed into the system due to the lack of operational data within the ERP. However, in the Upgrade Stage the Testing Practices were more detailed and were performed on a copy of the operational data extracted from the running ERP. Table 8 illustrates the intensity of the human resource involvement, complexity and the knowledge at both phases of the scenario testing practices:

	<b>Scenario Testing Pattern</b>	
	<b>Adoption Phase</b>	<b>Upgrade Phase</b>
<b>Human Resources</b>	Low HR involvement. More a training process.	High HR involvement due to the large number scenarios.
<b>Complexity intensity</b>	Considered low due to the high level scenarios	Highly complex with the presence of the detailed scripts.
<b>Knowledge Intensity</b>	Low level of knowledge needed in scripts for the new ERP. First time using the forms.	High level of knowledge to develop test scripts. Users has been using the ERP forms for many years

**Figure 8.** Scenario Testing Pattern Dimensions

## B. Limitations and Further Researches:

This research paper may have several constraints or limitations that future researches of this subject may tackle. These limitations can be summarized as follows:

First, the firm industry is FMCG and it is operating locally in Lebanon. Hence, studying the different industries like media or advertising industry may yield different results than the ones illustrated in the case above.

Second, this paper is based on the results of interviews carried out with key users, managers and director currently working at the organization. To examine this phenomenon further, it may be appropriate to consider carrying out the research on a wider scope of interviewees and targeting the key users that were present during the Adoption Stage.

Third, the situation may be different if a consultant was present in the Adoption Stage. It was apparent that in the Adoption Stage, the firm absence of an external consultant, practices could have changed the content of focal.

Fourth, having documentation in the Upgrade Stage of the ERP may have changed the way scenarios were developed in the Upgrade Stage and thus the intensity level may have been affected as well.

Fifth, findings from the research gave indications of other dimensions that maybe studied beyond the three practices, such as how the decisions in general may move up and down the organization hierarchy and how the whole organizational ERP implementation may change.

Sixth, further studies can be carried out to develop a “predictive framework” that could aid organizations on the best practices that could be carried out through adopting a full-fledged ERP. Such a framework can be useful for project managers and organizations to plan the long term “Total Cost of Ownership” of an ERP including the multiple Upgrade Stages.

## CHAPTER VIII

### CONCLUSION

In this research paper, we were able to highlight on some aspects of the ERP customized ERP implementation projects in a local FMCG firm. We have attempted to de-black-box what is called “ERP customization”. Although many researchers in the literature have discussed various aspects of adopting or customization of ERP processes, it has always been at “40,000 feet.”!

However, our research paper has gone deep and consede the details of the customization. We focused on practices throughout two different stages of the ERP implantations. The first stage was while the organization is Adopting a full-fledge of ERP system while it was operating an in-house developed system that did not cover all the aspects of the business value chain. The second stage was Upgrade Implantation that many organizations who adopt ERP have to go through. We tried to shed the light on the “**how, why, who and when**” of the customization practices that are taken throughout two stages.

In light of the attributes that are inherent to each of the two stages of the ERP implementations (Adopting an off the shelf ERP system and Upgrading the ERP at later stages), the analysis reveals three distinctive patterns of knowledge content and role change that take place in both stages of the ERP implementation: Decisions Making practices; Scenarios Development practices; Testing Scripts Development practice.

We were able to focus on what happens inside this stage and were able to highlight the “who, what, how and when” within this stage. The findings also highlighted how more human resources are involved in the ERP customization projects in the Adoption Stage due to the large number of decisions that need to be taken by all the heads of departments in the Upgrade Stage

there were more minor but fewer decisions to be taken to transfer the previously Customized Processes. Another finding is that the complexity of the decisions making. Again in the Adoption Stage we found that the complexity was very high while introducing a new technological capability into the organization compared to a low complexity in the Upgrade Stage where the firm was aware of the expectations from the ERP modules. The third dimension we were able to highlight in this research was the knowledge intensivity. That is, the concerned parties in both stages performed decisions that involved different knowledge levels way from the very low to high in the Upgrade Stage.

Another pattern was identified after the decision making practices. We found out that the involvement of human resources was low in the Adoption Stage and increased in a significant way to be the only people preparing the scenarios in the Upgrade Stage. Although the same pattern was observed for the complexity of the scenario preparations where it changed from low to high as the scenarios were more detailed in the Upgrade Stage. The level of variance was identified between the two stages same the previous pattern. Process owners were more knowledgeable of how and what is needed to be developed in each scenario in the Upgrade Stage.

A final pattern which pointed for the success of the UAT was the testing of the scenarios prepared at the previous pattern. We found out that human resources involvement, testing complexity and the amount of knowledge that users have increases in a significant way in the Upgrade Stage. This was mainly due to the knowhow that users gained and enabled them to decide whether it is a successful implementation or not.

We can conclude that Scenario Development practices and the Testing Script Development practices are directly proportional. The more the scenarios were complex, detailed, and less knowledgeable the less the testing efforts were done on these scenarios.

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