



## Business Process Management in Small and Medium Enterprises: The Service Industry

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**Abstract**— *A business process typically crosses the borders of organizational departments and even companies. Thus, business processes are complex artifacts that challenge managers in their efforts to properly manage them. Against this background, business process models are key artifacts to represent how work is performed in organizations.*

*There is a great deal of concern among different developing economies; including Egypt, that SMEs' potentials are not fully utilized although they dominate these economies, and claim to contribute to their success. The question often asked is what challenges are preventing those SMEs from performing efficiently.*

*This research focuses on examining the issues regarding SMEs in Egypt, and assessing whether Business Process Management; particularly Business Process Re-engineering, would help enhance the organization's performance for particularly service-providing SMEs and explore the effectiveness of modelling business processes in identifying the areas needed for improvement.*

*Process modelling is used to capture the current situation of a small-sized marketing agency in Egypt, and accordingly problem areas and deficiencies are identified. As a result, needed improvements were realized and recommended for the organization; paving the way for the 'to-be' situation, which highlights the importance of adopting BPM in service-providing SMEs.*

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**Keywords**— *Business Process Management, Small and Medium Enterprises, Process Improvement, Efficiency*

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### I. INTRODUCTION

Current business environment is mostly characterized by rapid changes, severe competition, and also high customer turnover in some cases. For an organization to remain competitive, whether it is providing a product or a service, it must always sustain response for customers' changing demands as quickly as possible. In other words, being agile is considered a key competitive advantage for organizations nowadays. This is derived from the fact that if customers are not receiving what they want rapidly, accurately and hassle-free, even extraordinary offerings will not be able to compensate the customers being annoyed and eventually this would ruin the firm's financial performance (Baltzan, 2012).

Examining business processes helps the organization to find out bottlenecks, get rid of duplicate activities, merge related activities, and to recognize smooth-running processes. To remain competitive, organizations must optimize their business processes by ensuring that each process is done in the most effective and efficient way that would help it to achieve its goals. Sustaining a full control over business processes would likely enable organizations to maintain continuous process improvement [1].

Modelling and analyzing business processes would considerably help an organization to address and understand its business processes more effectively and efficiently. In this context, process modelling is one of the most cost-effective and rewarding ideas to come along in years. That is simply because process modelling enables organizations to visualize and understand the inter-functional processes, as well as each process effect on the other, and thus helps it identify the processes needed for improvement [2].

### II. RESEARCH PROBLEM

SMEs are apparently considered the dynamic force for sustained economic growth and job creation in developing countries. Despite their dominance and importance, they still need assistance due to the several problems that are preventing them from realizing their potentials, and leading to inefficiency in their performance. Among the different challenges explored by literature, management of information appeared to be a critical one.

This challenge is further more significant in SMEs in the service sector, as their operations usually involve high degree of customer interaction, and hence encounters large amount of information. In addition, this information is usually exchanged between, and accessed by, different individuals in the organization and between the customer and the organization as well. The increased awareness of customers forces these service providing SMEs to appropriately manage information. Therefore, helping service-providing SMEs to manage and best utilize information and business processes should improve their performance and consequently improve economic growth in developing countries, such as Egypt.

In this regard, the majority of organizations turned their attention towards the field of Business Process Management (BPM) which according to [1] has “a focus on end-to-end process improvement, through the managing, the discovery, design, deployment, execution, operation, analysis and optimization of business processes”. However, due to the scarcity of research that relates or employs BPM implementations for SMEs; there is a widespread breed of a counterfeit impression that process-driven optimization frameworks are only applicable to large corporations despite the fact that it has been proven in a number of studies that BPM is equally effective when applied to SMEs [3].

Accordingly, two research questions are raised for this study:

1. What are the main factors that cause inefficiency for SMEs in in the service sector?
2. How could Business Process Modelling help SMEs in the service sector to improve performance?

### **III. SMEs IN EGYPT**

It was concluded by [4] that SMEs are often threatened by problems that are uncommon to the larger organizations. These problems include lack of IT support, lack of formal procedure and discipline; that makes it difficult for a third party to understand the existing business practices and match them with the IT process, and uneven IT awareness and management skills; which often results in conflicts during the implementation of a new system. In addition SMEs usually have limited financial resources that force the organization to select cheap solutions. Yet, hidden costs still emerge during implementation. Lack of human resources is another obstacle; sometimes implementing IT projects that encompass business processes across different departments or involve large amount of initial data entries, require human resource during the implementation. Some SMEs are often in the stage of shortage of manpower which hinders the allocation of time needed for implementation [5].

These issues need to be resolved as the potentials of SMEs create a significant need to encourage and support them to be able to flourish. It also must be ensured that SMEs are quite aware of all the managerial functions that affect the performance of their businesses [5]. The need to assist SMEs has been argued since many years. The report from The Department of Trade and Industry in 1996 has reinforced this argument stating that small business population changes constantly; new businesses are started, and others close rapidly. It was also recognized that SMEs that are neither feasible nor competitive would naturally close down. This report concluded that effort has to be made to assist SMEs, otherwise exhaustion over time might lead to increased fatalities in the current business environment where competition is severe, customers are more demanding and technology is continually advancing [6].

### **IV. RIVA AS A PROCESS MODELLING TECHNIQUE**

Riva is broadly defined as a relatively simple and easy to apply method used for modelling the organizational behavior in a revealing and communicative way, through presenting the particular processes existing and the way by which they interact with each other [7]. The Riva’s emphasis is on managing the business entities through the actions and interactions of different roles participating; unlike other tools that depend only on the business logic. Hence, Riva is categorized to be a business-oriented process modelling method rather than software- oriented [8].

Besides, [9], the founder of the Riva method, argued that Riva seeks to explore the in-depth scopes of the business. When modelling business processes, it focuses on understanding and designing those processes that are derived from the essential business entities. It puts roles, actions and interactions as the priority of its detailed analysis rather than data items or process logic, as well as it provides a high-level, architectural level of analysis. Instead of being committed to existing work practices and technology base, Riva tends to understand those in terms of what the business is about and trying to do [10].

In this essence, Riva offers the potential for reuse between different organizations, claiming that “Riva process architecture is invariant for an organization that stays in the same business”. In other words, it is possible for two organizations to share the same process architecture as well as they are operating in the same business. Moreover, Riva has gained popularity due to various reasons, as cited by [11] the most important of them are:

- Providing a clear and practical method for developing process architecture from a set of business entities.
- As the processes in the architecture are identified, the internal structure of each can be modelled using the established method of RAD. (Ould’s version of RAD is incorporated within Riva.)
- The process architecture and associated set of RADs can serve as a blueprint for the implementation of processes, which might be partly or fully automated.

In addition, Riva method also supports improvements that might be performed on a short-term trial basis and then consolidated if they appear to support long-term objectives. The resulting process models then act as a basis for process analysis and improvement [8].

### **V. RESEARCH METHODOLOGY**

A case study is conducted; concerning the assessment of Business Process Modelling in the service sector of SMEs in Egypt, more specifically in a marketing agency called GreenMedia. The case study method is based on the research methodology described in the previous chapter. In this chapter, the individual research sites and the data-gathering process are highlighted.

Data gathering involved individual semi-structured interviews and document analysis, that were used to capture a full and clear image of the case company’s current state, the way by which the firm is operating, and what are the challenges facing it. The interviews were pre-arranged and conducted at the premises of the key informants.

## VI. GREEN MEDIA

### A. Green Media's Workflow

The Riva method is used to model the overall system for GreenMedia in an attempt to produce the 'as-is' diagrams that are further examined and improved to recommend the ways by which the company would enhance its performance.

For this purpose, the analyzed data were used and the following steps were taken as suggested by [9] Ould (2005); first, the boundary of the organization has been identified. Second, the organizations' subject matter was brainstormed to identify the EBEs. Third, those EBEs that have a lifetime which is handled by, or are the responsibility of, members of the organization are classified as UOW. Fourth, a UOW diagram that describes the dynamic relationships between UOW is drawn. Fifth, it is assumed that for each UOW, there is a CP that handles single instances of the UOW, and a CMP for dealing with the flow of instances. Sixth, the UOW diagram is transformed into first-cut process architecture, and then the second-cut process architecture is generated using the provided heuristics. Finally the RAD is produced to provide in-depth modelling of each process individually.

By interviewing the key representatives at each department and reviewing the documents presented by the company, the researcher was able to depict the overall workflow of GreenMedia. The main processes are captured, as well as the data needed to be transferred and the way by which the job is done have been identified. GreenMedia mainly differentiates itself in the market by professionalism; working on each part of the clients' projects separately using the skills and techniques required. Being a service provider GreenMedia operates to attain the highest possible level of customer retention, hence, it seeks to enhance its performance to be able to make projects at higher quality.

GreenMedia constitutes five departments; each responsible to undertake part of the client project. The departments and their responsibilities are as follows:

- Clients Servicing Department: This is considered the point of access between GreenMedia and its clients. It is responsible for the clients' accounts (including the client brief and projects' details), informing new projects' requests and ensuring the availability of all needed data for those involved, tracking the projects, and reporting back to clients and CEO.
- Studio Department: Responsible for the design phase of clients' projects.
- Production Department: Responsible for implementing the designs on physical products.
- Event and Activation Department: Responsible for organizing and managing public events and outside campaigns for clients.
- Finance Department: Responsible for managing expenses, cash flows, and preparing and maintaining financial documents and reports.

Within those departments the following roles are constituted:

- CEO.
- Account Manager.
- Account Specialist.
- Creation Director.
- Studio Coordinator.
- Designers.
- Production Manager.
- Production Subordinates.
- Event Executive.
- Event Specialist.
- Financial Manager.
- Treasury Accountant.
- Accountant.

The workflow starts at the client side where the Account Manager meets the client and gets full information about him; the sector where he is working, the level of standard and size of the company, target segment, type of operation, previous marketing campaigns, and budget. Such information helps the Account Manager to have a detailed overview of the client which they call 'client brief'. Besides, the Account Manager receives the requested projects from the client with its full details. Projects could be a full marketing campaign, or just small projects such as designing a company's logo, creating a banner, making give-away, and such products.

The Account Manager is then responsible to post the client brief and the requested project details (job details) to start working on the project. She collects all the data and sends it to the studio department via e-mail, then meets Studio Coordinator to describe the project. The Account Manager is the only link between the company and the client and hence throughout the project she is responsible to answer any inquiries from studio or production department or from clients as well. She is also responsible to track the projects and report back to clients and the CEO.

At the studio department, the Studio Coordinator receives the job details randomly then meets with the Creation Director to put the guidelines, and then she assigns tasks to the designers. Designers then search for ideas where there is an ongoing link between them and the Creation Director to modify and approve on the proposed idea and to add his suggestions throughout the design phase as well. Job details and tasks are then sent to the designers, including the start date and deadline of the project to start working on.

Design proposal and its price are sent to client for approval to complete with implementing the design. A design quotation; holding the price of the design shall be approved by the client at this stage. After design implementation, the final design is sent to the client and payment is finalized at the finance department, if this is the end of the project. Otherwise if the project requires production, technical description is added to the design and sent to the production department.

At the production department, the Production Manager receives the final design and technical description and accordingly estimates the needed time for production, assigns tasks to subordinates, and decides upon the materials and supplies needed. He then deals with the appropriate suppliers, prepares the estimated costs and sends them to the Account Manager to get client approval. Another quotation is generated here; holding the costs of material plus profit percentage. After the client replies, costs are sent to the finance department to get the money for suppliers. An ongoing assessment exists throughout the production phase. When done, the Treasury Accountant shall prepare the final invoice and collect the fees from the clients.

In addition, there is event and activation department which is responsible for particular projects such as public shows, sponsorship events, special corporate events, and outside campaigns (booth for example). These projects are prioritized by default and needs direct contact with the client. In this department, the starting point is also at the client, where he sends the event details to more than one company. Each company then, in this case GreenMedia, starts brainstorming ideas and prepares a presentation to be sent back to the client to choose from the different presentations. If the idea is approved, the work goes into the normal flow mentioned above, while outsourcing is usually needed for implementing those projects.

## **B. Green Media Modelling**

Accordingly, the following are the suggested EBEs for GreenMedia:

- The client requesting the project.
- The supplier from which the material needed for physical products are purchased.
- The competitors.
- The employees.
- The new project requested by the client.
- The project budget.
- Brainstormed project ideas.
- The design proposal; which is an initial storyboard of how the design will look like.
- The client approval on the design proposal that involve negotiating issues and editing in the design. As well as on production costs and material.
- The tasks' assignment.
- The design implementation; where the storyboard after approval is implemented using the appropriate tools and applications. Throughout the implementation design modifications are made as well.
- The final design, which is either delivered for the client, or attached to a technical description to be applied on physical products.
- Cash deposits paid by clients.
- Production order to implement the finished designs.
- Suppliers' reviews.
- Supplies needed for production.
- Production costs incurred in purchasing the materials and manufacturing the products.
- Production tasks' assignment.
- Final product.
- An event request.
- An event plan.
- The client approval on event plan.
- The outsourced material and personnel for implementing events.

### **1) GreenMedia's UOW**

New UOW may emerge around collections of other units or out of changes to existing units. In the case in hand, the candidates for unseen UOW are produced by the need to make changes to design proposal and modifications that take place throughout implementing the design.

Recalled by the literature, when developing the Riva technique [9] stated that the process architecture must be concentrated solely on the EBEs, so that it illustrates only the processes that are there because the company is working in that sector; being independent of the organization itself. However, [9] then argued that incase an organization is analyzed in an attempt to build its 'as-is' model, then the way the organization chooses to operate its business is needed as well. Hence, in such cases DBEs shall be included and left to generate processes in the architecture [9]. Accordingly, as this research attempts to capture the 'as-is' situation of the case study, DBEs are taken into consideration as well.

### **2) GreenMedia's DBEs**

- The client brief (full profile about the client).

- The quotation (documents the initial price of the project).
- Invoice (includes the full price of the project after adding costs and taxes).
- Design technical description (describes the technical standards by which a design could be applied on a physical product).
- The art work presentation.
- Outdoors material.
- Follow-up sheets.

In order to develop the UOW diagram, some of the EBEs and DBEs listed above are excluded as they do not qualify as UOW, as well as the UOW that are collections of other units are added leaving us with the following list of UOW:

- The new project requested by the client.
- Brainstormed project ideas.
- The design proposal.
- The client approval.
- The tasks' assignment.
- The design implementation.
- The final design.
- Production order to implement the finished designs.
- Supplies needed for production.
- Production costs.
- Production tasks' assignment.
- Final product.
- An event request.
- An event plan.
- The client approval on event plan.
- The client brief.
- The quotation.
- Design technical description.
- Change to design proposal.
- Design modification.
- Production modification.

A UOW diagram can now be drawn to show the connections between the various units of work, and particularly how do they likely produce or generate one another.

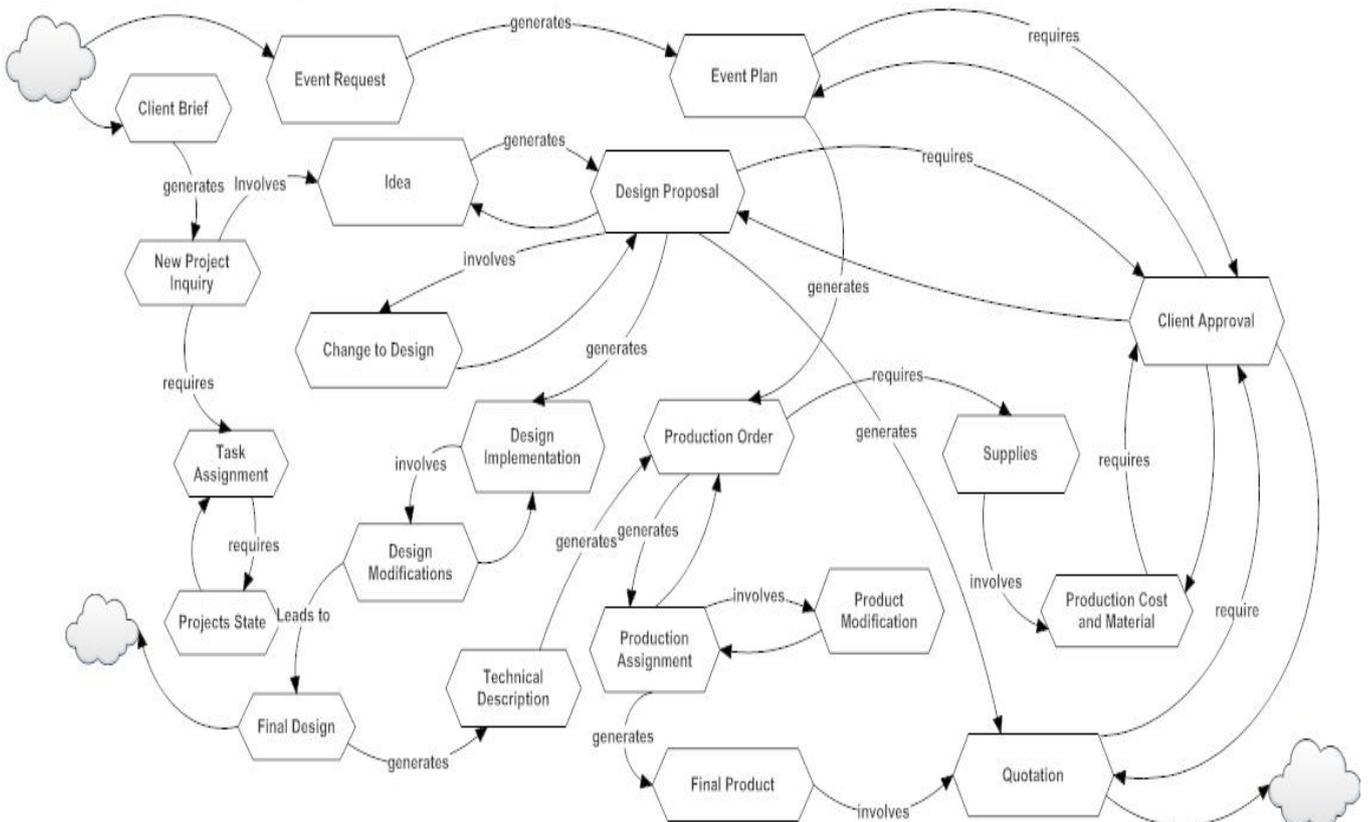


Fig. 1 Green Media's UOW

### 3) First-cut Process Architecture for GreenMedia

In the next phase of modelling, the UOW diagram is elaborated into an initial process architecture diagram. In this phase, for each UOW, a CP and a CMP are distinguished. ‘Handle a (unit of work)’ is generally used to name a CP. A new case is primarily instantiated at the CMP, which then requests the CP to start working with the case instance. Managing the flow of processes involves batching CP instances, putting them in order, prioritizing them, tracking them, and solving conflicts that might occur and so on. The CMP commonly activates or starts CP instances and interacts with them if needed. ‘Manage the flow of’ is used to name a CMP.

Each process (whether CP or CMP) is represented by a rectangle. The processes are connected by arrows showing how the process makes a request to, starts, or delivers to another process.

Figure 2 shows the first-cut process architecture for GreenMedia, based on the UOW diagram in Figure 1.

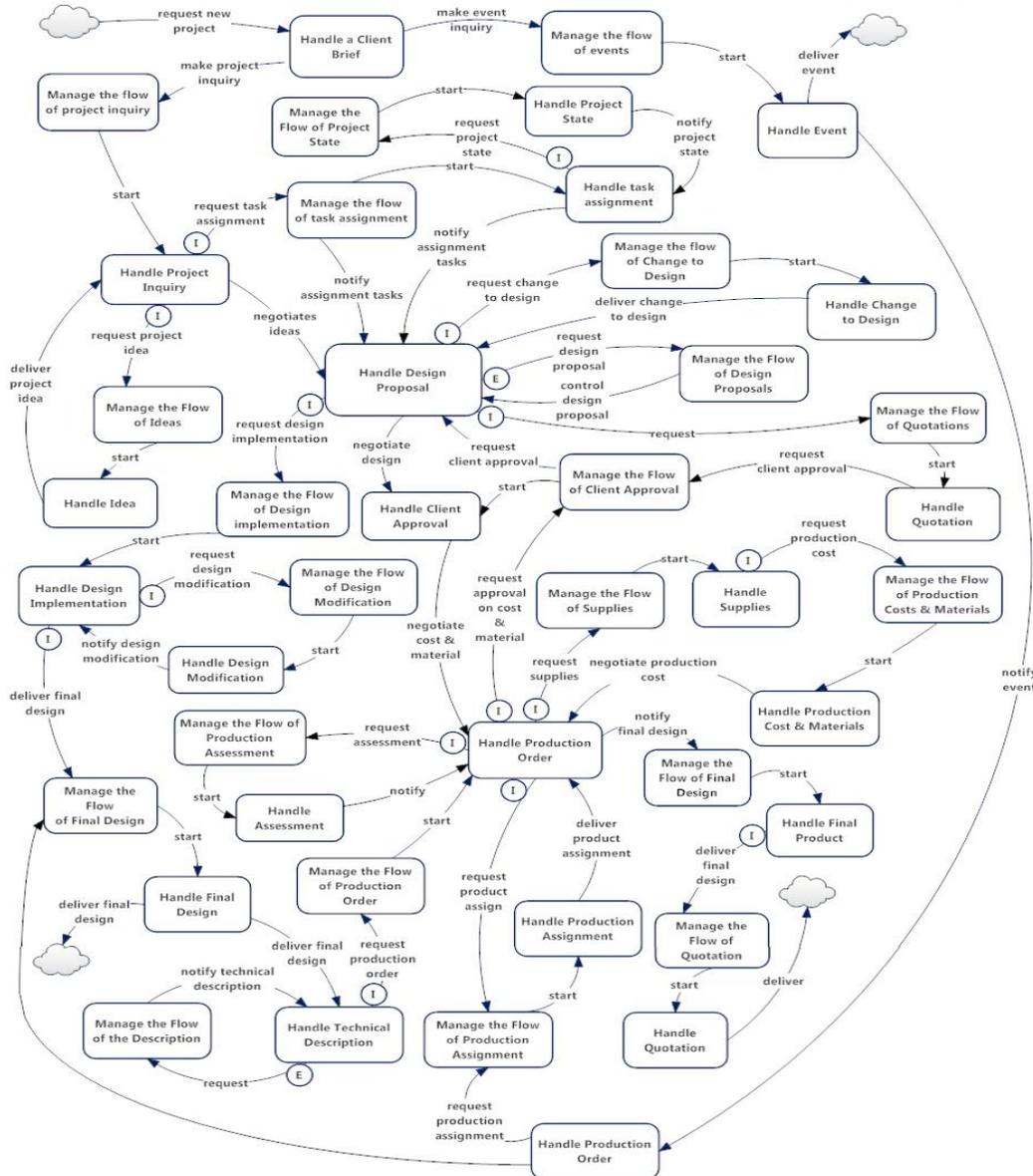


Fig. 2 Green Media’s First Cut PAD

### 4) Second-cut Process Architecture for GreenMedia

Ould (2005) clarified that the first-cut process architecture often shows more than actually exists in the organization. Therefore, he has identified some heuristics proposed to reduce this process architecture to a more compact second-cut process architecture that is closer to the real situation. The following are the five heuristics listed by Ould (2005):

1. For task-force relationships, fold the CMP into the CP that requests it.
2. If a CMP for a particular UOW has nothing corresponding to it in reality, it may be removed from the process architecture.
3. When one UOW generates precisely one other UOW, it may be possible to remove the associated CMP.
4. If UOW are linked in a chain (A generates B, B generates C, etc.), it may be possible to short circuit the chain (so that C delivers directly to A, for instance). Also if the generate relationship is just ‘fire and forget’; it does not deliver anything in reality, then this interaction shall be deleted.
5. Where one UOW stands for a collection of UOW that the first one generates, the CMP for the second UOW may be folded back into the CP for the first one.



## VII. CONCLUSIONS

When investigating SMEs in Egypt, there seemed to be some challenges causing inefficiency for these SMEs performance. By analyzing the data gathered from the investigation at the case company, it was found that among the problems that literature claimed are the reasons behind SMEs' inefficiency, the problem of quality of information is a significant one. Actually the investigation revealed that the problem with information is not just a matter of quality, it is rather related to the way by which information is dealt with, transferred, interpreted, and utilized. Meaning, the way by which the organization's business processes are managed impacts the overall performance of the organization; especially in the service sector where SMEs performance is directly affected with the management of information.

By analyzing the case study, it was found that the casual manner by which the workflow is done and managed contributes, to a great extent, to inefficient performance. It was concluded that the inefficiencies encountered in the organization were due to inefficient operation and management of processes, incorrect usage of information, using irrelevant information, and inappropriate employment of resources.

When interviewing the key representatives at the case company, most of them related the existing problems to the lack of automation, those respondents recommended that automation is the solution, while at the same time some of them revealed that even when they were working with an automated system there were still inefficiencies in the performance. However, the analysis conducted proved them wrong. The problems identified are not due to the lack of an automated system, they are rather due to the inappropriate workflow of the system itself. Therefore, it could be concluded from this research that adopting BPM in service-providing SMEs would help detect some of the inefficiencies existing and accordingly find solutions; through process re-engineering, that would improve the overall performance of the organization.

The Riva method did not just model flow of processes, but rather demonstrated the relationship between different processes, and the real flow of information and how they are exchanged. Riva also enabled us to identify the deficiencies in the allocated roles itself. It clearly showed that some interactions are time consuming, some are just causing redundancy, and others are completely useless. These observations were similarly explored by the respondents while interviewing them; which proves the argument explored by [12] [13] that using dynamic models of business processes can help to conquer the inherent complexities of studying and analyzing businesses, and therefore donate a higher level of understanding and improving the processes.

## REFERENCES

- [1] Van Ravesteijn H, van Dijk I, Lucassen (2011), 'Commentary to: medically unexplained symptoms as a threat to patients' identity? A conversation analysis of patients' reactions to psychosomatic attributions by Burbaum et al.', Vol. 84, No. 1, pp.137-8
- [2] Patient Educ Couns. 2011 Jul;84(1):137-8; author reply 139-40. doi: 10.1016/j.pec.2010.12.030. Epub 2011 Feb 1.
- [3] Lundqvist, M., Sandkuhl, K., Seigerroth, U. (2012). "Enterprise Modelling and Knowledge Transfer in Distributed Teams – Lessons Learned", 24th International Conference on Advanced Information Systems Engineering (CAISE'12).
- [4] Perepa, B. (2011). "Next Stage in Business Process Management", Washington DC WUG Meeting, June 29, 2011, Washington DC.
- [5] Hussein (2009)
- [6] Fouad, M.A. (2013). "Factors Affecting the Performance of Small and Medium Enterprises (SMEs) in the Manufacturing Sector of Cairo, Egypt", International Journal of Business and Management Studies, Vol.5, No.2. pp. 157-166.
- [7] Goh, P.L. (2000). "The Implementation of Total Quality Management in Small and Medium Enterprises", A Thesis Submitted for the Degree of PHD, Departement of Mechanical Engineering, Univertsity of Sheffield.
- [8] (Odeh and Youssef, 2012)
- [9] AbdelAziz, R., and Fady, R. (2012). "Developing Business Process Architecture using Business Process Modeling: The ATM system in HSBC Egypt", International Journal of Modeling and Optimization, Vol. 2, No. 3.
- [10] Ould, M. (2005). Business Process Management : A Rigorous Approach, 1st ed., Meghan-Kiffer Press.
- [11] Abd El Aziz, R and Fady, R. (2013), 'Business Improvement using Organisational goals, Riva technique and E-Business Development stages: A Case Study Approach', regular issue of the Journal of Enterprise Information Management, Emerald, Vol. 26, No. 5. 577-595.
- [12] Green, S. Beeson, I. and Kamm, R. (2009), 'Reusable Process Architectures and Process Models: An Experience report from Higher Education', International Journal of Business Process Integration and Management, 4, 2, p.72-92.
- [13] Ganesan, E (2011). "A Practitioner's Guide to Assess the Maturity and Implementation of Enterprise Process Modeling using CEProM Assessment Framework", BPTrends.