العدد الثانى
مجلة مستقبل العلوم الاجتماعية
Journal Future of social siences
يوليو ٢٠٢٠

The Relationship between Business Process Management and Organizational Performance: An applied study on Telecom Egypt

العلاقة بين إدارة العمليات التجارية والأداء التنظيمي: دراسة تطبيقية على المصرية للاتصالات

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Research Submitted to fulfillthe requirements of Doctor of Business Administration (D.B.A) degree, Business Administration, Helwan University.

2020

The Relationship between Business Process Management and Organizational Performance: An applied study on Telecom Egypt

تاريخ استلام البحث ٢٠٢٠/٦/١٥ تاريخ نشر البحث ٢٠٢٠/٧/١

Summry:

The Business Process design and development of an organization must be taken into consideration as it amount for the effectiveness to enhance organizations' overall business performance, t**his research aims to answer the above questions as following:**

1. Explore to what extent the current orientation of Telecom Egypt toward the business process.
2. Find out the relationship between business process orientation and organizational performance.

This study reached the answer to all the Research hypotheses.

Key words: Business ProcessManagement - Organizational Performance, Telecom Egypt

الملخص:

يجب أن يؤخذ تصميم عملية الأعمال وتطويرها في الاعتبار حيث أنه يرقى إلى مستوى الفعالية لتعزيز أداء الأعمال العام للمؤسسات ، ويهدف هذا البحث إلى الإجابة على الأسئلة المذكورة أعلاه على النحو التالي:

١. اكتشف إلى أي مدى التوجه الحالي للمصرية للاتصالات تجاه العملية التجارية.

٢. اكتشف العلاقة بين توجيه عملية الأعمال والأداء التنظيمي.

وقد توصلت هذه الدراسة إلى الإجابة علي جميع فروضها المطروحة في البحث.

الكلمات المفتاحية:

إدارة العمليات التجارية، الأداء التنظيمي، المصرية للاتصالات

Introduction:

Organizations are continually under competitive pressures and forced to re-evaluate their business models and underlying business processes. Business processes represent a core of the functioning of an organization because the company primarily consists of processes, not products or services.

In other words, managing a business means managing its processes. Despite their importance, the business processes have been neglected for a long time in managerial studies mainly due to the fact that departments in companies are structured in a functional or product oriented way.

The Business Process design and development of an organization must be taken into consideration as it amount for the effectiveness to enhance organizations' overall business performance.

Research significance:

Undoubtedly, telecommunication has become one of the main pillars of modern societies, especially after the enormous developments that the information and communications technology(ICT) industry witnessed all around the world. In this regard, Telecom Egypt has played a pivotal role in driving the growth and development within the local ICT market, depending on its infrastructure, which is the largest in the region and spread all around Egypt.

"Telecom Egypt has been, and will always be, a key partner and an eyewitness of the rise of the ICT sector, and an active

element in boosting the comprehensive development process in Egypt".

(Ahmed El Beheiry, Ex-Chief Executive and Managing Director of Telecom Egypt).

By interviewing some of Telecom Egypt's top& middle management they confirm that in order to achieve the previous missionthe organization grapple with the challenge of connecting the subsystems they have devised to enhance specific contributing functions.

They also added high costs are borne from duplication of effort, inconsistencies, and inefficiencies. They suggest that the organization must move from managing silos to managing systems and process.

Especially since competitiveness increasingly demands that the organizations reinvent themselves in a smart, fast and sustainable manner from performance point of view. Also there is no doubt that decision makers can be altered to both the success factors and causes of failure of different approaches.

When everyone in an organization is organized and works around the concept of individual functions or departments, this encourages introversion and also decreases efficiency.

The resource-based view of the organization has argued that organizations are unlikely to yield superior performance if they operate business process management (BPM) resources in isolation. As organizations attempt to boost their performance, the question becomes how to configure BPM resources to continuously improve organization performance.

Being able to access a model of the organization, focused on what is delivered to the end customer, really helps to break down silos in an organization. It reminds each department that they are part of a larger whole and also gives clarity to what the rest of the organization is doing.

Rendering a quality ICT service to the customer within many Service delivery operations as in the case of the (IT and test environment at Telecom Egypt), has been a challenging task due to lack of documentation of what and how various activities are being carryout different roles and responsibility in an efficient and effective manner. Putting into consideration that in order to find improvement areas, the processes need to model, visualized and documented. Besides, visibility and documentation, the business process performance will be measured, monitored and analyzed accordingly.

A pilot study:

Since Telecom Egypt is very huge company as described above, the pilot study is restricted on to TEdata organization as part of the company. The organization is a service delivery organization that rendersInformation and Communication Technology (ICT) services nationally and for the other parts of the company. The aim of the organization within the company is however, to create an environment of value and collaboration where common functions work together with all stakeholders on establishing Telecom Egypt as the Network Society leader around Egypt.

In order to analysis of the current situation for the organization's business processes, we refer to Request Tracker Tool (RTT) thatused by TEdata service delivery organization, to track the requirement from different customers request until services are fully delivered. This tool was used to capture all the data regarding the lead time for the procurement customer ticket. And based on the captured data from the RTT tool, current analysis based on the past, when there was no standardization and visualization of business processes was drawn out and deduction about the current state were made.

RT tool used for tracking the customer request until solution is provided. The same RT tool is visible to all the stakeholders involved in the end to end flow of the ICT service delivery render to the customers. All information about the status of the entire flow in the ticket customer request is visible in the RT tool.

Furthermore, there are two Key Performance Indicator (KPI) measurements regarding the lead time of services rendered to different customers by the organization and this KPI was one of the goals defined by the top management of the organization to execute the organization's strategic initiative.

there is strategic initiative to reduce the order-to-cash, that is, shortening the lead time of service deliveries towards TEdata customers, reducing working capital and improvement operational performance (Business performance management) which is the basis of this research work.

Thefollowing KPI measurement frame indicating how the measurement is calculated in the RT tool. The parameters used to calculate the lost lead time and lead time reduction are: Ticket create date, Agreed due date and Resolved date for the customer.

The two different Tedata service delivery organization KPI measurements regarding the lead time in delivering quality service to different customers are listed below:

Where:

LLT (Lost Lead Time) = Resolved Data – Agreed Due Date.

LTR (Lead Time Reduction) = Resolved Date – Ticket Create Date.

Based on the input from the LLT and LTR derived, the KPI (LLT and LTR) are calculated below:

- **LLT KPI value = Σ LLT/ Σ (no. of SR);** measured in days.
- **LTR KPI value = Σ LT/ Σ (no. of SR);** measured in days.

Where:

LLT =Lost Lead Time: The time lost after the agreed due date set by the customer based on their request.

LTR =Lead Time Reduction: This is the total lead time between customer request and when the service is finally rendered.

SR = no. of Service Request ticket

In this research work, and for the sack of the pilot study we will focus only on the **KPI (LLT)** measurement will be

considered for analysis of result to highlight the impact of business process modelling to enhance organizational performance.

The figure 1 and figure 2 below shows a non-uniform distribution of data for the **no. of customer service request ticket** and **KPI (LLT)** respectively. Three departments within the TE data ICT Service delivery organization was taking into consideration in this research work. That is, ICT cloud, ICT Evolved infrastructure (EI) and ICT mobile core (MC) deliveries.

The data were captured with the RT tool already mentioned above and analyzed with the Microsoft Excel.

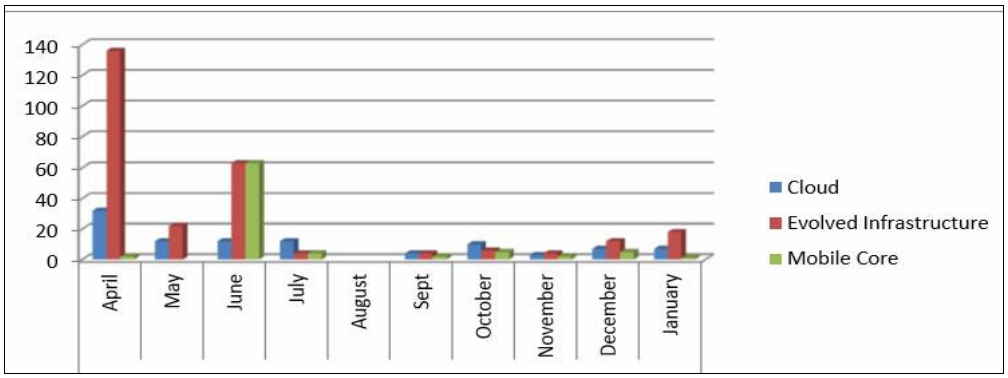


Figure 1:No. of service request tickets April 2018-January2019in the ICT service delivery; Cloud, EI, and MC

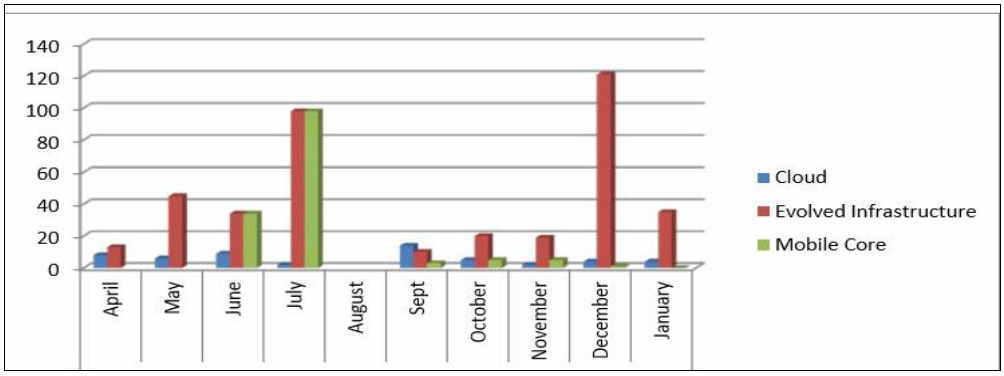


Figure 2: KPI (LLT) between April 2018 and January 2019 for ICT Service Delivery for Cloud, EI and MC

From figure 3 which shows the KPI (LLT) for the three department used as case study for the analysis of the organization business performance, it can be seen that the lead time have a non-uniform distribution pattern and this is due to the fact that the measurement was not based on a concrete business process modelling that standardize and visualize the ways of working in these respective departments in the organization. And since there is no model that visualizes the business processes in which activities are carried out, improving business pe0rformance management to help the organization sustain a competitive advantage is astake.

The root cause of the not having the standardized and visualized business processes to always improve the organization was due to some major reasons which include:

1. Team capability and skills – Process and Technical skills within the pilot study team,
2. Effective communication and awareness about business processes, and

3. User involvement and communication in the Business Performance Management Enhancement.As according to (Ariyachandra, 2008) those factors can hinder the success of improving organization or business performance management.

An example of the cause due to the reason of an effective communication on the way of working was the requested due date of need by customer was not properly communicated between the service delivery organization and the customer, and thereby affecting the meeting their needs within the specified time. In some case, procurement ticket request that should take lead time of 8 weeks was set by the customer to have within two weeks, which is absolutely unrealistic set date due to the processes involved to secure their need.

In addition to the business process limitation as no concrete agreement on ways of working on how the customer and the service delivery organization should resolve a problem. Thereby, causing a long time delay in responding to problem in some case, which also has impact on having a lost lead time in the delivery time in providing adequate service to the customers.

we can conclude that the problems highlighted above was due to the lack of visualizing and standardizing the business process in those department of TE-Data service delivery organization and this is affecting the meeting up the set strategy target as to reduce the lost lead time in delivery services to market, accordingly have an overall effect on Telecom Egypt overall improvement performance.

Research problem:

Accordingly, the problem statement can be stated as follows: Telecom Egypt has done considerable efforts to improve business process management using the methods and tools of continuous improvement, but the effects of such efforts are ambiguous. This is due to the absence of measuring the outcomes of business process management on overall organizational performance based on a scientific methodology.

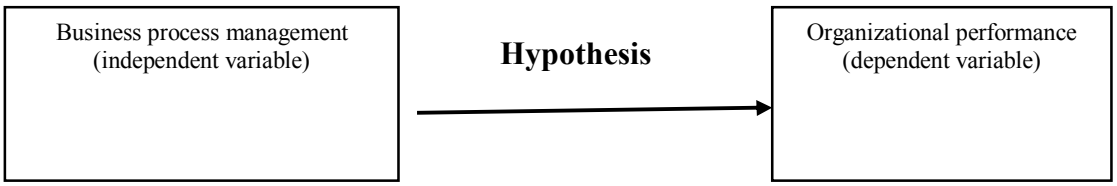
Objectives:

the research objectives will try to answer the above questions as following:

3. Explore to what extent the current orientation of Telecom Egypt toward the business process.
4. Find out the relationship between business process orientation and organizational performance.

Research model (variables):

The conceptual model, used in this study, can be demonstrated by the following figure:



Research hypotheses:

H0: there is no statistically significant effect at the level of significance ($\alpha \leq 0.05$)to the business process managementon the organizational performance.

H1: there is a statistically significantpositive effect at the level of significance ($\alpha \geq 0.05$)to the business process managementon the organizational performance.

Literature review:

The goal of this Literature Review, in this research, is to identify the articles that discuss the relationship between BPM and organizational performance.

Accordingly this systematic review is to find out how the authors have, in the literature, linked BPM and organizational performance. A review protocol was developed in the beginning of the systematic review to make sure that the research is undertaken as planned and not driven by researcher expectations.

The research will be divided into three main sections:

Section One: Business Process Management (BPM).

Section Two: Organizational Performance.

Section Three: Link between BPM and Organizational Performance.

Many academics are now overpraising the central role of business processes in improving performance. For example, Kaplan and Norton's book "Strategy Maps: Converting Intangible Assets into Tangible Outcomes" places business processes at the center of their approach of measuring a firm's progress in strategy implementation (Spanyi, Six Sigma and business process management., 2004a). They emphasized that to moving to a process enterprise, managers need to conduct a thorough analysis to determine which aspects of process performance are most directly linked to

achieving the organization's overall objectives (Hammer M. &., 2001).

The motive of the most organizations to move toward process orientation that it indeed provides numerous benefits, such as more efficient execution of work which reflect in cost savings, improved customer focus hence gain customer satisfaction, better integration across the organization, etc. the most important advantages of process-based organizational structure, in comparison to functional one, are in economical design of business processes, in addition to reducing cycle time (Sikavica & Novak, 1999).

A process orientation of the organization leads to:

- Coordinating work across functions which in the turn leads to cycle time reduction.
- The faster time cycles reflect in reduced inventories and faster receipt of cash.
- The reduced costs of carrying inventory mean reduced the working capital.
- Other costs are reduced due to eliminate duplication of work across functions, as process organization eliminates such redundant activities, verifying input once for all functions.

In other word Implementing BPO as a way of organizing and operating in an organization will improve internal coordination and break down the functional silos that exist in most organizations. Research has shown that this increase in cooperation and decrease in conflict improve both short- and

long-term performance of an organization (McCormack, Johnson, & Walker, 2003).

To conclude, the more business process oriented an organization is, the better it performs both from the employees' perspective as well as from an overall perspective.

However, some other experiences are showing that organizations are managing their business processes with different success, what indicates that it depends on established balance between organizational structure and organization's environment. In other words, not all the attempts related process transformation has been good. Many organization have found that even dramatic levels of process improvement often do not translate into better business performance (Keen, 1997). Moreover, most organizations only have some well-defined processes and are only in the starting phase to use process measures and process management techniques to control their organizations (Harmon P., 2003). All above-mentioned emphasizes even more the importance of studying a process orientation as an important factor in modern business.

The process management making it easier for the employee understand how their activities are integrated to the business to evaluate what is needed to be measure, since it allows the organization to link the actions of the different internal functions with the competitive factors of the organization. (Souza, 2016)

The following part trying to determine the link between business process management and four dimensions to measure the organizational performance (financial performance, product quality, customer satisfaction, delivery speed).

1. **Link between BPM and financial performance:**

   It is noted that the PO(process orientation of the organization) introduces transparency in the organization in the form of the non-value adding activities are easily detected by discovering and analyzing an organization's business processes.so an organization can improve its financial performance through the cost reductions which it can gain through elimination of non-value adding activities.

2. **Link between PO and product quality:**

   Considerably less attention has been paid to the effects of PO on non-financial firm performance. Several authors, like Hammer (2007b), Hinterhuber (1995), Hirzel (2008), and Schmelzer and Sesselmann (2006), argue the PO leads to higher product quality. Case study research, carried out by Bulitta (2006), Ku ¨ng and Hagen (2007), and Setti and Stu ¨ckl (2006), also refer to a positive relationship between PO and product quality. It is therefore expected that PO is positively related to product quality.

3. Link between PO and customer satisfaction:

It is clear that Silo-oriented organizations do not easily give their employees the opportunity to focus on the customers and their issues. The departments are (internally focused) as they are trying to make their internal issues perfect, but they do not think about possible improvements from the customer perspective which may result from collaborating with other departments. As business processes are aligned with customer requirements, PO implements customer orientation (Osterloh and Frost, 2006) which in turn should lead to a higher customer satisfaction. Hinterhuber (1995), Hirzel (2008), and Schmelzer and Sesselmann (2006) argue the PO leads to higher customer satisfaction. Several case studies, carried out by Bocionek (2006), Bulitta (2006), Hertz et al. (2001), Schima (2004), and Wahlich (2004) also report that a shift to a higher level of PO leads to higher customer satisfaction. The empirical study of Gustafsson et al. (2003) shows a direct significant effect of PO on customer satisfaction for large service organizations. It is therefore expected that PO is positively related to customer satisfaction.

4. Link between PO and delivery speed:

By discovering and analyzing an organization's business processes, non-value adding activities are easily detected. The elimination of non-value

adding activities therefore should lead to speed improvements. Hammer (2007b), Hirzel (2008), and Schmelzer and Sesselmann (2006) argue that PO leads to throughput speed improvements. Also, case study research carried out by Bocionek (2006), Classe and Mundle (1997), Hertz et al. (2001), Ku ¨ng and Hagen (2007), Mittermaier and Braun (2004), Ongaro (2004), Setti and Stuckl (2006), and Wahlich (2004) report that PO leads to throughput time reductions. The empirical study by Forsberg et al. (1999) shows that PO has been perceived to have a positive effect on cycle time speed. It is therefore expected that PO leads to delivery speed improvements.(Reijers & Kohlbacher, 2013)

Research methodology:

The research is quantitative as defined by Polit, Beck and Hungler (2004), considering that focuses on a small number of concepts, begins with preconceived ideas of the way the concepts are related, uses structured procedures and formal tools for data collection. It is based on data collection and analysis and assumes that statistical methods make the study possible of generalization (MASCARENHAS, 2012) and it uses statistical method to analyze gathered data and tries to explain the observed object or phenomenon based on the behavior of the analyzed variables (CASARIN, 2012).

According to the nature, it is an applied research. A practical and specific problem is studied in a context and a solution for it is proposed using the same context. The result of this work should be the analysis of the impact of BPM capabilities on organizational performance.

According to objectives, this research is descriptive. This kind of research is used to characterize actions, behaviors or opinions of a group and uses standard data collection tools such as surveys (Casarin, 2012). It describes characteristics of phenomenon or populations and can identify correlations between the variables involved on the analysis (GIL, 2002; Mascarenhas, 2012).

According to the procedures, this study is bibliographical and a survey. Bibliographical research helps to give a correct direction to research because intends to review previous academic work on a theme and allows the researcher to understand which areas can be explored or define problems not solved yet (Marconi; Lakatos, 1991). It is very important to surveys searches because bellows to identify and analyze multiple approaches to solve a problem and also help on new methods or approaches definition. This research analyzes published articles on BPM and organizational performance themes. (Souza, 2016)

This part will describe the methodology taken into consideration during the course of the research work. It

will start by describing the objectives and the purpose of carrying out the research work. Furthermore, explanation about differences in terms of research methodology will also touch.

Moreover, it will explain the approach that will used to carry out the research within the scope of this thesis work. In addition, the objectivity in the research methodology selection approach and ethical consideration will also highly taken into consideration.

Having strictly sought permission from the Manager of Telecom Egypt delivery before the research study was carried out; active general observation in Telecom Egypt service delivery premises will used as a major methodology tool during the course of the research work.

Also, despite the fact that the researcher was an employee in the company, the research study will carry out without any bias, as the researcher will be very objective in both the qualitative and quantitative data retrieved during the course of the research work. Likewise, ethical consideration will fully adhere to, as all information and observation noticed during the research study was strictly made confidential among different stakeholders involved during the course of the research study.

Data gathering was carried out using the measurement from KPI Lost lead Time (LLT) and Lead Time Reduction (LTR) of the customer tickets, in the Service Delivery business process operation, within three units in Telecom Egypt. The Data retrieved from this measurement will be analyzed,

and observation and conclusion will be drawn out from it, in accordance to the scope of the thesis work. After the analysis of the data; performance improvement will be measured to ensure alignment with the company strategy.

The focus strategy was *order-to-cash cost reduction* (that is, reducing the lead time of customer ticket in the service delivery operation).

The following section of research method explored a lot of information regarding the research strategy that will be used to validate the literature background of the research area and at the same time highlighting the methods and tools needed to collect the data for carrying out the research and how the analysis will be drawn out from the data collected.

Data collection method

The research design included document analysis and quantitative approach which entails capturing and analysis of data.

Research Process

The research process started with the literature background study of Business Performance Management (BPM) and its relationship with how it can be enhanced through Business Processes visualization and standardization. As soon as we received a permission from top management of Telecom Egypt to conduct the research, the practical scenario in Telecom Egypt Ways of Working was also considered as part of the research process as it gives the picture of the company status when it comes to their BPM and its business processes in carrying out their daily operation.

Furthermore, since the researcher currently work in the company, it gives me the opportunity to understand the background on their business process when it comes to the ways of working and standardization. The Manager of the organization and some other stakeholders will also be interviewed and to understand the reason behind the process ambiguity and lack of standardization in the organization ways of working, when it comes to their business processes of the daily work activities with different responsibility areas. All the gathered information gave the researcher the opportunity to become fully aware of the organization background and history when it comes to the organization's Business Performance Management (Business Process in particular) which is in conjunction to the researchers' knowledge base regarding the intended research areas.

Second-source data gathering

Literature review – a systematic search of published work to find out what is already known about business performance improvement through process modelling and visualization. This will help the researcher to analyze and measure improvement areas. Also, collecting internal documents and information from the company that will be relevant for the thesis.

Empirical data gathering

Interviews – these will be performed early in the project in order to be used as a baseline for further exploration and to choose which processes to focus on to consider as evidence of the existing of the research problem. Some team members

will be randomly interviewed to further understand the Organization Business Process Ways of Working and Standardization.

Case study (pilot study) chosen process will be investigated further and the current state of the process will be documented. Further interviews will be held at this stage.

Questionnaire– For realizing the empirical research, the researcher developed a questionnaire. It comprised 21 questions on BPM elements and performances of business processes. The questions were distributed across the two domains of questions presented in the theoretical part of the paper. The first group of questions refers to BPM, as follow:

Level 1 of Business Process Maturity (Initial):	3 Questions
Level 2 of Business Process Maturity (Managed):	3 Questions
Level 3 of Business Process Maturity (Standardized):	3 Questions
Level 4 of Business Process Maturity (Predictable):	3 Questions
Level 5 of Business Process Maturity (Innovating):	3 Questions

Table 1

Second group of questions refers to performances of identified business processes, each question describes a specific business process orientation characteristic or business practice considered important within each domain. All responses in the survey pertaining to both dependent and

independent variables are measured on five-point Likert scale from 1 to 5 (agreement scale: 1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree).

Target Population

This study targeted all levels of Telecom Egypt's managers which currently has a pool of 900managers at 1st Jan 2019.

Sample Size and Sampling Techniques

Sampling in research is important since it is not possible to study every member or element in the whole population as it would be costly and time consuming. Stratified random sampling technique was used to select 180 personnel from the population which represents 20 % of the whole population. According to Fraenkel & Wallen (2006),(Fraenkel, 2006)a sample size of 20% is adequate for a study and hence justifying the size for this study. The research involved a selected group from management and Operations.

Data Analysis

Data was collected and analyzed as per set objectives. This was mainly descriptive and was done using Excel packages&(Minitab 17 Statistical software). Content Analysis was also used. Content Analysis is the systematic qualitative description of the composition of the objects or materials of the study.

Analysis:

Questionnaires were addressed to CEO and senior managers estimated as having adequate knowledge of the BPM and

performance within their divisions and sectors. Initial response was low at 56 responses after three weeks. After sending out a reminder, thiswasincreasedto 198.From the 198 received questionnaires, 117 were filled out till the last question. For many of the 81 partially completed questionnaires, a considerable percentage of more than 75 % of the data was missing, such that missing data imputation methods, like mean replacement would significantly bias the results. In such cases the recommendation is to include only complete cases in the analysis (Hair et al. 2010). Therefore, we continued the analysis with the 117 questionnaires that were filled out till the last question.

We originally aimed at an audience of top managers to ensure a strategic and to some degree even an interdisciplinary perspective on the company in question.

In the statistical analysis process, it is possible to figure out whether the relationship between independent and dependent variables is the same as what literature described or not.

The aim of this work is to provide exploratory evidence on the effects of BPM on organizational performance, as formulated in the study's research question.

In order to measure the study validity, the following measures have been taken.

- Content validity, by aligning the questions with existing measurement instruments from literature and by having the questions examined for content validity by an expert panel of process management professionals.

- Construct validity, by analyzing factorial validity, using factor analysis.
- Construct reliability, by analyzing the internal consistency of the constructs, using Cronbach's Alpha.

Sincetheconceptof BPM isamultidimensionalconstruct,onehastoensurethatthe construct's underlying dimensions are unidimensional, reliable, and valid. Unidimensionality is assessed by exploratory factor analysis with Varimax rotation. Construct validity is supported by thefact that none of the items loaded greater than 0.50 on more than one factor. Adequate construct reliability of the dimensions was assessed by using Cronbach's α 0.05

The questionnaire was structured in such manner so that the key elements of business process management in Telecom Egypt can be analyzed.

Exploratory Factor Analysis:

Before testing the entire model using structural equation modeling, we have conducted exploratory factor analysis to get the first insight into our data and to assess the validity of our measurement model. The main concern in this part is "Do items really measure the specified constructs?" We used Minitab to run a series of data reduction tests. Data were subjected to Factor Analysis technique using principal axis factoring extraction method combined with Varimax rotation.

First, we analyzed the items measuring business process management& organizational performance constructs. The first construct (business process management) had been tested extensively, the results shown in Table 8 were anticipated, as six factors emerged,each representing one aspect of business process managementBPM & organizational performance OP. Using 0.50 loading cut-off value, which according to Comrey and Lee (1992) is a good score.

The analysis also points that statistical prerequisites for the exploratory factor analysis are met, since the Kaiser-MeyerOlkin (KMO) Measure of Sampling Adequacy exceeds 0.60 (0,720) and Bartlett's Test of Sphericity is statistically significant.All factor loadings exceeded this value, Empirical analysis confirmed that the extracted factor explains a significant part of the variance of individual items, which is demonstrated by individual factor loadings (which typically exceed the experiential limit value of 0.5). The extracted factor explains 59.20% of the total variance, which

is considered satisfactory for its values to be used in further statistical analysis.

Operationalization of Business Process Orientation and Organizational Performance

After subjecting the data to factor analysis the purified data can be used to operationalize the measurement of BPM and OP constructs.

domains	Questions
Definition, documentation and measurements of business processes.	M41,M33,M31,M42,M32 ,M43,M21
Process oriented organizational culture.	M13,M11,M12
Continues improvement & innovation	M53,M51,M52
Non-Financial performance (competition perspective)	P3,P6
Overall performance(financial + non-financial)	P2,P1
Performance Management	P4,M23

Confirmatory analysis using structural equation modelling

The next step in our analysis was the assessment of the model fit, where we were interested whether the hypothesized model is consistent with the data. First, we examined the measurement part of the model. Our aim was to determine the validity and reliability of the measures used to represent the constructs of interest. Validity reflects the extent to which an indicator actually measures what it is supposed to measure. Validity can be assessed by examining the magnitude and significance of the loading paths λ that represent a direct relationship between the indicator and the

construct. All λ's should be significant (t-values should exceed 1.96) and exceed a 0.50 threshold.

As it can be seen from the Table below all indicator loading values are significant (at $p < 0.01$ or better – t-values exceed 2.64) and exceed .50 which provides validity evidence in favor of the indicators used to represent the constructs at interest.

To test the composite (construct) reliability the composite reliability index (CRI) and average variance extracted (AVE) were calculated. Composite reliability assumes that a set of latent construct indicators is consistent in the measurement. There is no generally acceptable standard for adequate values of CRI. Koufteros (1999) suggested values above .80, while Diamantopoulos and Siguaw (2000) were satisfied with .60. AVE is similar to CRI with the one exception that standardized loadings are squared before summing them (Hair et al., 1998; Koufteros, 1999). The cutoff value most often used for AVE is .50 (Bagozzi & Yi, 1988; Hair et al., 1998), while there are also cases where a milder restriction of .40 was employed (Diamantopoulos and Siguaw, 2000).

domains	**Unstandardized factor loading**	**Completely standardized factor loading**	**t-value**
Definition, documentation and measurements of business processes.	.88	.74	8.81
Process oriented organizational culture.	.66	.60	7.60

Continues improvement & innovation	1.28	.96	8.28
Non-Financial performance (competition perspective)	1.04	.54	6.66
Overall performance(financial + non-financial)	8.56	.83	9.30
Performance Management	5.07	.79	9.07

Table 2Unstandardized, completely standardized loading estimates and t-values

	CRI	**AVE**
BPM	.76	.52
OP	.80	.51

Table 3 Composite reliability index and average variance extracted

As it can be seen from the above table all values for CRI and AVE surpass the prescribed values, therefore the reliability of indicators is acceptable.

Testing the hypotheses:

H0: there is no statistically significant effect at the level of significance (α≤0.05)to the business process managementon the organizational performance.

To test this hypothesis, ANOVA analysis and simple and multiple linear regression were used to check the availability of the impact of business process management on the organizational performance. The following table illustrated the results of ANOVA analysis between business processes management and the organizational performance. There was a significant impact to the business processes management on the organizational performance at the level of significance α (≤ 0.05). The value of the calculated F was (17.12) and it was statistically significant at the level of significance (α≤ 0.05).

	source	SOS	MS	DF	Calculated T Value	Sig.
Business process management/ organizational performance	**Regression**	3.215	3.215	1	17.120	0.000
	Remains	29.861	0.188	88		
	Total	33.077		89		

Calculated F=2.60 at level of significance (0.05)

Table 4 results of ANOVA test between business process management and business performance superiority

The following table showed the results of simple linear regression analysis that prove the existence of business process management's impact on the superiority in the business performance as R coefficient was (0.419) at the

level of significance (α≤0.05) while R2 coefficient was (0.097) which means that (0.097) of the changes in the superiority in business performance is a result of the change in the level of business processes management.

	B	Standard error	Beta	Value t*	Sig.	R	R^2
Reliability coefficient	2.337	0.389				0.419	0.097
Business process management	0.403	0.097	0.419	4.138	0.000		

**tabulated T=1.165 at the level of significance (0.05)*

Table 5 simple linear regression analysis of the business process management on the organizational performance.

The value of β is (0.419) which indicates an increase with a degree in the business process management leads to an increase in the organiztional performance (0.419).The calculated value of T for the impact of business process management on the organizational performance , which was (4.138), was significant at the level of significance (α≤0.05), and therefore the null hypothesis is rejected and the alternative one is accepted which means there is an impact to the business processes management on the organizational performance.

Discussion:

Data from the content analysis stage provided insights to the current situation of Telecom Egypt structure.

Building on the content analysis a series of interviews provided insights into the current views and interpretations of

BPM decision making and BPM roles and responsibilities. Both phases of the research assisted in creating and clarifying the case and setting some of the organization's BPM definitions.

Overall, it was found that BPM roles that work "in" and "on" a process are defined, however, they are not visible. Staff are not assigned the BPM roles as part of a workforce or succession planning and managed accordingly. The career paths of BPM roles that work "on" a process are to be developed and the performance managed to ensure further capability is built. It was recognized that all staff on all levels of management in the organization have a role to play in BPM.

For the findings of this research to be effectively deployed, the organization's senior management team should endorse the future BPM model as part of the management framework, and deployed it as an enterprise-wide practice.

Successful deployment will involve embedding the following enablers into management systems across the organization:

- a corporate ownership function;
- assigning the role of practice leadership;
- adopting principles and standards;
- identifying relationships and dependencies; and
- Assignment of BPM roles.

Although It is important that organization have goal alignment, research indicate that there is little knowledge and experience in organization in aligning the process goals with the business goals. This could explain the unsuccessful

process improvement efforts or perhaps even the suspicion towards process improvement in general.

"By properly measuring organizational and individual efforts, managers send a clear message about what is expected, which eventually mobilizes the workforce" (Hernaus T. B., 2012).

The process management allows organization to link the actions of the different internal functions with the competitive factors of the organization, making it easier for the employee understand how their activities are integrated to the business to evaluate you need to measure.

It is important that organization have goal alignment but, researches indicate that there is little knowledge and experience in industry in aligning the process goals and organization's business goals. This could explain the unsuccessful process improvement efforts or perhaps even the skepticism towards process improvement in general (Lepmets, 2012).

Objective and formal analysis of business processes is not easy because, among other things, there is no one-way to represent processes and there are no standards on granularity of activities and the information that needs to be captured. However, process analysis is necessary and these factors cannot undermine the possibility of do it. Organizations are recognizing the importance of separating business process from software applications and are also investing in tools for process monitoring, intelligence and operations for achieving business performance goals. Structural metrics must be

chosen according to the functional and performance goals of the process but either consider the organization strategy (Balasubramanian, 2005) .Targets need to be set in terms of these metrics and performance monitored based on them. A balanced set of process metrics considering, for example cost, speed, and quality, must be deployed, so that improvements in one area do not mask problems in another (Hammer, 2015).

Although Bititci et al. (1997) said that business management needs PMS, Choong (2013) through a systematic review using a meta-analysis dispel the notion that a PMS is a prerequisite to the introduction of an effective BP in organizations because " (…)the PMS as advocated by various authors for over 20 years (since 1990) failed to fulfill the measurement requirements of BPM". This can hinder the association of cause and effect between two or more constructs. On this way, it is important to make a critical systematic review to identify how BPM and organizational performance have been linked by the scientific community (Choong K. K., 2013)

In our research to identify the fundamentals of a performance measurement system (PMS), in order to ascertain if they satisfy the measurement requirements of BPM, Choong (2013) discovered that a majority of the searches adopt the view of process as a simple, cause and effect workflow or so, despite an acknowledgement by a minority of these authors, and other authors in themanagement, operations research and IS fields that PMS are systems, suggesting that measurement

should be devised for BP rather than on workflow or on business functions. The important aspect is how one measures a production or BP where we can see the transformation that occurs in the process, and determine should we add value to the input and create an output that ismore useful and effective to the recipient either upstreamor downstream. (Souza, 2016)

Main findings:

The researcher came up with the following findings:

1. BPM essentially creates value for the end user through activities in an organization and by fulfilling other strategies like generating returns on invested capital.
2. The empirical findings reveal that process performance measurements, a process‐oriented organizational structure combined with the application of continuous process improvement methods, and – in particular – a culture in line with the process approach, all are significantly and positively related to organizational performance.
3. The managers' interest in the components of business processes management's cycle is moderate which indicates an integrated symmetry in improving the processes, identifying and designing processes, following up and controlling the processes and modeling and documenting the processes.
4. The managers' interest in the superiority of business performance was distinguished and distributed to both; the competitive performance and the operational processes superiority in an integrated and balanced manner.

5. As functional silos are broken down and business processes start to be integrated, inter-functional conflicts decrease and inter-departmental connectedness increases.
6. Process maturity can also influence the interaction between a company and its business partners (suppliers and customers).

Managerial implications:

As the organization improvesits management systems and change existing process management practices in order to become more process oriented it inevitably optimize its processes and organizational structures that support them putting into consideration the following points:

- The increase of the awareness of business processes management as an important factor to achieve business performance superiority.
- Having the same degree of interest of both the competitive and operational performance to assure the organization's continuity and excellence in the field of business.
- Holding training courses that help in spreading the knowledge and culture of business processes and superiority fields in business performance.

Also since the main aim of this research was to determine whether higher level of business process management leads to higher performances of business process. The data from the empirical research, which were subjected to statistical techniques, confirmed that statement.

It is necessary that the organization management fully understands the benefits that process-oriented management of the organization brings in terms of business focus, structural elements, the performance measurement system and employee reward systems.

Managers of the organizations need to understand the principles of the processbased management and thus manage the business processes, performances in line with the staged approach, i.e. phases such as: planning, measuring, analyzing and improving business process performances.

Research limits:

In Scope

The in Scope of this thesis work is as follows:

1. The thesis work only targeted the service delivery operation area of Telecom Egypt organization as a case study.
2. It will only focus on business process modeling as a tool to support the organization's quality improvement strategy.
3. Both the Business Process Modelling and its benefits will be presented in this work.
4. The performance improvement measurement will be effectively carried out.
5. Covering the academic literature only,
6. The paper is kept in the study if it satisfies all of the inclusion criteria:
    - Academic papers published on journals or conferences in English;

- Papers related to BPM and organizational or firm performance, at same time;
- Papers focused on companies;
- Papers that have explicated on it terms that configure business process practices or approaches (for example: "business process management" ,"business process orientation", "business process improvement", "business process analytics", "Business process reengineering", "6 Sigma" ,"TQM" etc..) in any point of it, except if the term appear only in the bibliography;
- Papers that have explicated on it, which performance indicators (or measures) were impacted by BPM.

Out of Scope

Following activities are out of scope:

1. The study does not cover organization business system outside Telecom Egypt service delivery operation.
2. The thesis will not touch areas outside the scope of Business Process Modelling as a tool or framework for quality improvement.
3. Several works that are published as (nonacademic) books, white papers in the grey literature reporting on model applications through case studies and surveys were not considered in this study.
4. The paper is kept out if it satisfies any of the exclusion criteria:

- Books, thesis, editorials, prefaces, article summaries, interviews, news, reviews, correspondence, discussions, comments, reader's letters and summaries of tutorials, workshops, panels, and poster session;
- Duplicate papers found on the digital libraries.
- Papers published not in English language;
- Papers in which was not possible identify which BPM practice or approach were considered.
- Papers in which was not possible identify which indicators were used to measure the impact of BPM.
- Papers not focused on companies.

Recommendation for future research

1. It is recognized that a limitation of this study is that the findings may not be generalizable to other situations and organizations, given the limitations of a focus on only one organization. Consequently, the BPM governance design model should be explored and tested further, thus presenting an opportunity for future research.
2. Future research can broaden the scope of the review to include contributions in the grey literature to gain further insight on the use and success of BPM in practice.
3. The performance of organization was measured in a qualitative manner. An alternative would have been to measure performance using absolute measures, such as turnover and profit.

4. In addition, it is not uncommon to determine organizational performance in a questionnaire by means of qualitative questions. The questions that we used were even derived from another study. To increase the practical impact of the study, a relation can be investigated between maturity level, financial performance and cost, to enable organizations to make a trade-off of whether or not to develop the BPM capability of an organization.
5. It is also highly recommended that knowledge and awareness of the combination of technical skills and business process skills should be provided to all the stakeholders involved in Telecom Egypt as this will allow fast deployment of business process management which improve the organization performance faster.
6. To be recommended also is the involvement of the users and effectively communicating to the entire stakeholder, the measurement of organization performance on a regular basis. It gives the full picture of where the organization is standing and areas that requires more attention and action for better success of the organization performance.
7. Flexibility in the standardization of the business process model is also highly recommended as it gives room for innovation and creativity for the people involved in the end to end of the organization. But, a question can also arise, that could you have flexibility

without destroying the standardized way of working, and to what extent is allowed. This on its own is an interesting topic that can research in any future research study.

8. Limitation of this empirical research is the fact that it was conducted only in Telecom Egypt, so a comparative analysis of practices in other organizations, on the basis of the selected indicators, needs to be done in the future research.

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Appendix (1)

Construct questions

I. Business process management

Questions are answered on a 1–5 Likert scale.

1. **Level 1 (Initial):**

   M11 Formal procedures for the execution of processes do not exist in our organization.

   M12 If procedures are defined, they are rarely followed.

   M13 Everybody executes tasks in its own way, in other words: everybody has its own methods.

2. **Level 2 (Managed):**

   M21 At the beginning of a project, we make agreements about which methods and technology we will use.

   M22 If we make agreements about work methods, they will be documented such that they can be executed in the same way at another time.

   M23 We use planning and management procedures to control our individual projects.

3. **Level 3 (Standardized):**

   M31 Procedures are standardized for the whole organization.

   M32 Work procedures and objectives are well documented in our whole organization.

   M33 Processes are defined such that they will be in the same way by different work groups.

Level 4 (Predictable):

M41 Performance is managed statistically (e.g. by measuring KPIs) to understand performance and to control variation.

M42 Processes/tasks are managed in such a way that they meet agreed-upon performance and quality goals.

M43 If processes do not perform according to predefined standards, they are corrected to meet the quantitative goals.

4. **Level 5 (Innovating):**

M51 Our organization understands its critical business issues and areas of concern by using feedback from performance measurements.

M52 Our organization sets quantitative improvement goals to constantly reorganize processes when perceived necessary.

M53 We constantly pilot with new ideas and new technologies to improve our processes.

II. Performance

P1 How would you evaluate the overall performance of your organization over the previous year 2018? Rate 1–5 (1=very bad, 5=very good)

P2 Rate the overall performance of your business (unit) in the past year? Rate 1–5 (1=very bad, 5=very good)

P3 Rate the overall performance of your business (unit) in the past year relative to your competitors Rate 1–5 (1=much worse, 5=much better)

P4 Rate the overall profitability compared to your competitors Rate 1–5 (1= much worse, 5=much better)

P5 Compared to your competitors, you met your overall goals Rate 1–5 (1=much worse, 5=much better)

P6 Compared to your competitors, the quality of the process output is Rate 1–5 (1=much worse, 5=much better)

Appendix (2)

Frequency Tables for : M11, M12, M13, M21, M22, M23, M31, M32, ...

M11	Count	Percent	M12	Count	Percent	M13	Count	Percent
3	20	17.09	3	27	23.08	2	4	3.42
4	68	58.12	4	62	52.99	3	20	17.09
5	29	24.79	5	28	23.93	4	76	64.96
N=	117		N=	117		5	17	14.53
						N=	117	

M21	Count	Percent	M22	Count	Percent	M23	Count	Percent
2	8	6.84	1	1	0.85	1	1	0.85
3	35	29.91	2	1	0.85	2	4	3.42
4	66	56.41	3	38	32.48	3	38	32.48
5	8	6.84	4	67	57.26	4	64	54.70
N=	117		5	10	8.55	5	10	8.55
			N=	117		N=	117	

M31	Count	Percent	M32	Count	Percent	M33	Count	Percent
2	4	3.42	1	3	2.56	1	3	2.56
3	20	17.09	2	16	13.68	2	15	12.82
4	67	57.26	3	35	29.91	3	41	35.04
5	26	22.22	4	55	47.01	4	50	42.74
N=	117		5	8	6.84	5	8	6.84
			N=	117		N=	117	

M41	Count	Percent	M42	Count	Percent	M43	Count	Percent
1	1	0.85	1	6	5.13	1	18	15.38
2	4	3.42	2	32	27.35	2	43	36.75
3	54	46.15	3	52	44.44	3	45	38.46
4	48	41.03	4	26	22.22	4	11	9.40
5	10	8.55	5	1	0.85	N=	117	
N=	117		N=	117				

M51	Count	Percent	M52	Count	Percent	M53	Count	Percent
1	1	0.85	1	1	0.85	2	11	9.40
2	7	5.98	2	9	7.69	3	51	43.59
3	50	42.74	3	42	35.90	4	47	40.17
4	53	45.30	4	58	49.57	5	8	6.84
5	6	5.13	5	7	5.98	N=	117	
N=	117		N=	117				

P1	Count	Percent	P2	Count	Percent	P3	Count	Percent
2	5	4.27	1	1	0.85	1	1	0.85
3	47	40.17	2	2	1.71	2	2	1.71
4	57	48.72	3	41	35.04	3	62	52.99
5	8	6.84	4	56	47.86	4	47	40.17
N=	117		5	17	14.53	5	5	4.27
			N=	117		N=	117	

P4	Count	Percent	P5	Count	Percent	P6	Count	Percent
1	3	2.56	2	6	5.13	2	4	3.42
2	9	7.69	3	51	43.59	3	57	48.72
3	58	49.57	4	51	43.59	4	49	41.88
4	45	38.46	5	9	7.69	5	7	5.98
5	2	1.71	N=	117		N=	117	
N=	117							
	4							