DEVELOPING A BUSINESS PERFORMANCE MANAGEMENT MODEL FOR PALTEL GROUP – PALESTINE

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ABSTRACT

Dynamicity environment of telecommunication industry, high-level of competition and increased customers' expectations has made necessity of getting awareness of attaining a comprehensive performance evaluation, confident, trustable and flexible. Paltel Group as a market leader in Palestine, should take advantage of methods and patterns consecutively with the aim of consecutive evaluation and improvement of their performance.

This study found Business Performance Management is an incredible method as it is helps organizations to plan, monitor, analyse, and manage business more effectively by providing a comprehensive view for enterprise. With a shared purpose, a consistent data model, real-time information, easy-to-use tools, and streamlined processes, it's much simpler to align operational procedures with strategy.

This research has contributed to providing decision makers with a systematic approach for establishing a visual strategy map with a consideration of the involved causal relationships among Key Performance Indicators (KPI's). Planning leadership team from Paltel Group in cooperate with the researcher review and formulate Paltel Group Strategy to identify business strategy and construct Balance Scorecard (BSC) and strategy map to measure financial and non-financial indicators. Proposed framework in this research would be a useful and valuable reference to measure actual performance against target values, and facilitate review and divide results to understand the post actions taken resulting in the current position.

This research proposes a model based on the Analytical Hierarchy Process (AHP) and BSC for evaluating the performance of Paltel Group, The analytic hierarchy is structured by the four major perspectives of the BSC including financial, customer, internal process, and learning and growth, followed by performance indicators.

BPM dashboard designed to enable senior executives to execute strategy, manage performance, and drive new or optimal behaviours across the group. They are primarily designed to facilitate monthly strategic review or operational planning sessions and help executives collaborate on ways to fix problems or exploit opportunities.

Keywords: Telecommunication industry, Performance Evaluation, Business Performance Management(BPM), Key Performance Indicators (KPI's), Strategy Formulation, Balance Scorecard (BSC), Strategy Mapping, Analytical Hierarchy Process (AHP), BPM dashboard.

1. Introduction

Palestine Telecommunications Company (Paltel Group) is the telecommunications leader in Palestine; The Group launched its operations in 1997 as a public shareholding company. It is provides fixed line, cellular and data services, making it the most integrated service provider and one of the largest companies operating in Palestine in terms of sales volume, market value and financial stability. The market capitalization of Paltel Group's Stock, the leading share among the listed companies on the Palestine Exchange, represents 33.2% of the total market cap on the Exchange as end of 2013.

Reliability and consistency in dividends' distribution over the past years with an upward trend to reach 50% dividends percentage of the par value distributed for 2013, As end of 2013, the Group's subscriber base in all telecom services reached 3.25 million customers with a 2.7% subscriber growth rate compared to end of 2012. (PALTEL annual report, 2008-2013).

Over the last few decades, the telecommunication industry has proven itself not only as an emerging economic sector but as a rapidly growing sector with a huge chain of economic and social impact.

As a result, several telecommunications companies were introduced and started to compete within this current market. Such competition presents challenges that affect the business performance of the various telecommunication industries.

The lack of strategic and communication mechanisms among the company vertically and horizontally, excluding staff members from the decision-making processes, poor coordination among business units and functional groups, and an evident gap between strategy and execution, have put Paltel Group under pressure from shareholders, stakeholders, executives, and staff, to achieve standards of corporate governance.

Paltel group pursues for performance evaluation, confident, trustable and flexible, which take advantage of scientific methods with a shared purpose, a consistent data model, real-time information, easy-to-use tools, and streamlined processes, to align operational procedures with strategy. And through increased insight, make faster decisions and boost performance to achieve business goals.

This study will bridge the existing gaps between strategy and then execution that impair achieving strategic goals, by having a structured business performance model. This model is endeavoring to achieve the following:

Improved Communication by providing executives an effective mechanism for communicating strategy and expectations to managers and staff at all levels of the organization via planning models and performance metrics joined to corporate goals and objectives.

Improved Collaboration and exchange of ideas and information, both vertically between levels within an organization and horizontally among departments and groups which manage a shared activity.

Improved Control by enabling staff to continuously adjust plans and fix or improve operations in a timely manner by providing them with up-to-date information about market conditions and the status of operational processes,

Improved Coordination among business units and functional groups that otherwise might act as independent segments, conflicting rather than sharing resources and information.

In accordance with the above, the proposed research must answer the following questions:
- What are the expected changes if a company implements business performance management (BPM)?
- How does BPM help organizations to align strategy with execution?
- How to identify and document the strategic KPIs, which ultimately determine the success of Paltel Group?
- Does Balance scorecard proper method to align measure financial and non-financial performance.
- Does Analytical Hierarchy Process proper method to prioritize strategic objectives and KPI's.

2. Literature Review

This chapter reviews literature of relevant studies to provide a theoretical background for the research. The review presents and discusses issues on, Business Performance Management, Telecommunication, strategy management, and performance measurement models.

Business Performance Management (BPM), coincides with the concept of Corporate Performance Management (CPM) and Enterprise Performance Management (EPM). These concepts provide a system perspective for optimizing the execution of business strategy, (Ballard, White, McDonald, Myllymaki, McDowell, Goerlich, and Neroda, 2005; Clark, Jones, and Amstrong, 2007). The concept of BPM was introduced to business in the 1990s by information technology research firms and software vendors (Cokins, 2009; Pritchard, 2008). BPM is misunderstood by many companies as being a new category to describe multiple applications including planning, budgeting, financial consolidation and reporting, forecasting and scenario modeling, score carding or dashboards, business intelligence, and key performance indicators (KPIs) reports. Eckerson (2004) argues that BPM is a common strategic and technical framework that pulls these applications together in a cohesive and concerted manner with a view to drive the whole organization toward achievement of strategic goals. Therefore, BPM is a much broader and bigger concept than planning, budgeting, forecasting, reporting, score carding, or business intelligence. These latter concepts are all tools underlying the business performance management concept. BPM defines and refines strategies, and manages them in order to enhance performance. It bridges the gap between strategy and execution by means of improved communication, collaboration, control, and coordination (Eckerson, 2004; Ballard et al., 2005). BPM enables organizations to enhance the capabilities of business intelligence systems for better monitoring, measurement, and management of business performance (Clark et al., 2007). Eckerson posits that BPM improves (1) communication of strategy and expectations to all levels of the organization through planning models and performance metrics that are tied to strategic goals, (2) collaboration across organization through two-way exchange of ideas and information, (3) control to continuously adjust plans and improve operations through dissemination of up-to-date information about market conditions and operational processes, and (4) coordination among business units and functional groups. Eckerson also suggests that BPM helps organizations better exploit opportunities as well as detect and rectify operational problems before they grow out of control.

To enhance the understanding of BPM, the framework will be exploded. Figure (2-1) depicts the framework which covers the four phases.
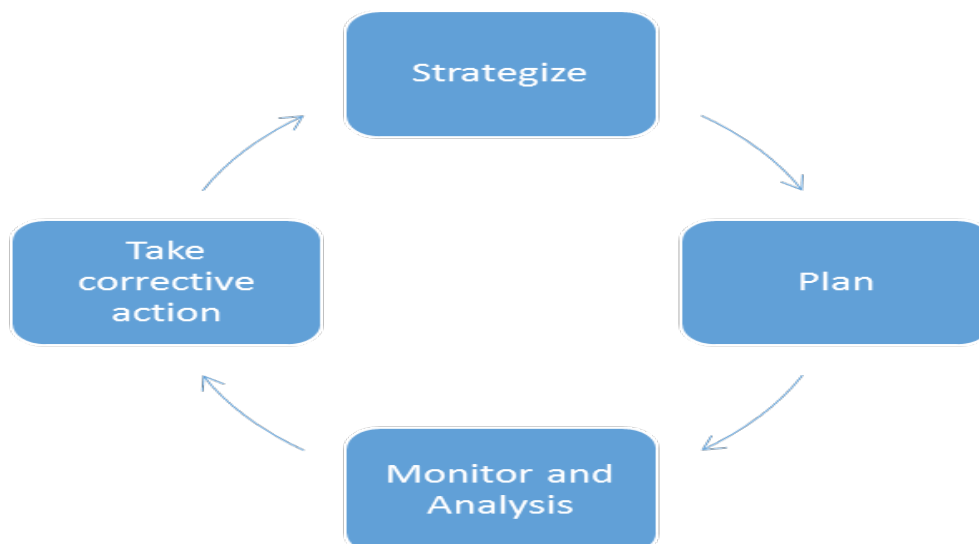

Figure (1): Business Performance Management Framework
Source: Adapted from Frolick and Ariyachandra, (2006:43)

Strategize: defining the way to identify business strategy, the discovery of key value drivers to accomplish strategy and create metrics to monitor the performance, (Ariyachandra and Frolick, 2008:114). To be competitive, one needs to stay competitive. This is accomplished to challenge the boundaries of performance. To strategize, owners or executive management of the business, review the past performance of the business and decide on future intent or direction for the business. This is also supported by a SWOT analysis.

Plan: defining a road map that is followed with specific projects, budgets and activities to fulfill the strategy. Planning to build a bridge from the current status of the business to the to-be state. If the goals were defined as part of the strategy process, planning will include the formulation of required key indicators to measure the progress towards the goals. Identification of gaps on measuring points is normally done in this process.

Monitor and analyze: actual performance against target values are reviewed and divided to understand the post actions taken resulting in the current position. Monitoring is continuously measuring how we are moving towards the target. Think of the GPS in your car, continuously tracking your move on the road, any deviations, you'll get the word. The same with businesses, progress need tracking and alerts to indicate to decision makers the course taken is not delivering the required results or we are on track.

Take corrective actions: by understanding the status, modification with identifiable reactions to re-align the actions to achieve the desired performance levels. Adjusting the driving direction will result in reaching your destination. Available information will give insight to what happened. Part of corrective actions is also tracking the status of the action.

The Balanced Scorecard (BSC)

The best known performance measurement system is undoubtedly the balanced scorecard (BSC), developed by Kaplan and Norton (1992; 1996a; 1996b). Kaplan and Norton (1996b) define the BSC as "a multidimensional framework for describing, implementing and managing strategy at all levels of an enterprise by linking, through a logical structure, objectives, initiatives, and measures to an organization's strategy". The BSC provides an enterprise view of an organization's overall performance: it complements the traditional financial performance measures with key performance indicators (KPIs). The four building blocks of the BSC are financial perspective, customer perspective, internal processes, and learning and growth. Having these four perspectives in mind, managers can translate strategies into specific measures that can monitor the overall impact of the strategy on the enterprise. The four perspectives also help in avoiding focusing on short-term financial results. If an enterprise execution was short term biased, the BSC will show week performance in other perspectives such as internal processes and/ or learning and growth perspective. Figure (2-2) illustrate the four perspectives of Balance scorecard.
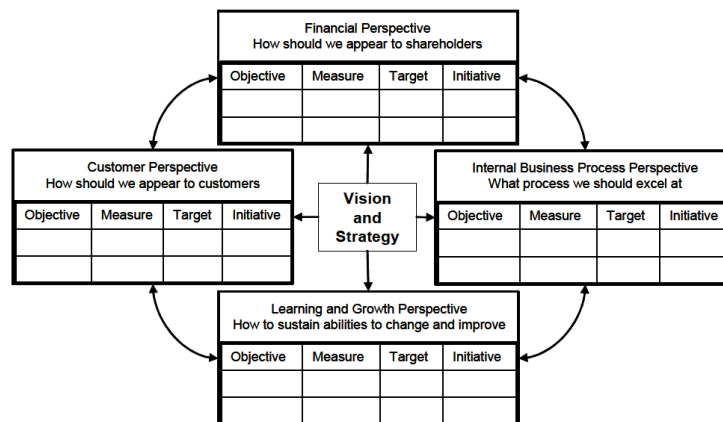

Figure (2): The Balance Scorecard
Source: Adopted from Kaplan and Norton 1996

The Analytic Hierarchy Process and its Foundation
The Analytic Hierarchy Process (AHP) is a methodology for structuring, measurement and synthesis. The AHP has been applied to a wide range of problem situations: selecting among competing alternatives in a multi-objective environment, the allocation of scarce resources, and forecasting. Although it has wide applicability, the axiomatic foundation of the AHP carefully delimits the scope of the problem environment (Saaty 1986). It is based on the well-defined mathematical structure of consistent matrices and their associated right-eigenvector's ability to generate true or approximate weights, Mirkin (1979), Saaty (1980, 1994).

The prime use of the AHP is the resolution of choice problems in a multi-criteria environment. In that mode, its methodology includes comparisons of objectives and alternatives in a natural, pairwise manner. The AHP converts individual preferences into ratio-scale weights that are combined into linear additive weights for the associated alternatives. These resultant weights are used to rank the alternatives and, thus, assist the decision maker (DM) in making a choice or forecasting an outcome. The AHP employs three commonly agreed to decision making steps: (1) Given $i = 1, \ldots, m$ objectives, determine their respective weights w_i, (2) For each objective i, compare the $j = 1, \ldots, n$ alternatives and determine their weights w_{ij} with respect to objective i, and (3) Determine the final (global) alternative weights (priorities) W_j with respect to all the objectives by $W_j = w_{1j}w_1 + w_{2j}w_2 + \ldots + w_{mj}w_m$. The alternatives are then ordered by the W_j, with the most preferred alternative having the largest W_j. The various decision methodologies (AHP, Electre, Multi-Attribute Utility Theory) are differentiated by the way they determine the objective and alternative weights, as prescribed by each one's axiomatic or rule-based structure. The general validity of the AHP, and the confidence placed in its ability to resolve multi-objective decision situations, is based on the many thousands of diverse applications in which the AHP results were accepted and used by the cognizant decision makers, Saaty (1994b).

It is our belief that the real essence of the AHP is not generally understood. The AHP is more than just a methodology for choice situations. It is not just another analysis tool. The best way we can explain the AHP is to describe its three basic functions: (1) structuring complexity, (2) measuring on a ratio scale, and (3) synthesizing. We also discuss some of the controversy about the AHP that has appeared in the academic literature. Saaty (1980) and Forman and Selly (1999).

In the late 1960's, Thomas L. Saaty, an operational research pioneer, was directing research projects for the Arms Control and Disarmament Agency at the U.S. Department of State. Saaty's research agenda, and very generous budget, enabled him to recruit some of the world's leading game and utility theorists and economists. In spite of the talents of the people recruited (three members of the team, Gerard Debreu, John Harsanyi, and Reinhard Selten, have since won the Nobel Prize), Saaty was disappointed in the results of the team's efforts. Saaty (1996).

Saaty sought a simple way to deal with complexity. He found one common theme in the way humans deal with complexity, that is, the hierarchical structuring of complexity into homogeneous clusters of factors. Others have also observed the importance of hierarchical structuring.

AHP is a multi-criteria decision method that uses hierarchical structures to solve complicated, unstructured decision problems, especially in situations where there are important qualitative aspects that must be considered in conjunction with various measurable quantitative factors. Applications of AHP include:

1. Developing a business performance evaluation system (Lee, Kwak, and Han 1995).

2. Making strategic decision about equipment replacement (Oeltjenbruns, Lolarik, and Schandi-Kirschner 1995)

3. Choosing manufacturing plant layout (Abdul-Hamid, Kochhar , and Khan 1999)

4. Making management decision about continuous improvement processes (Labib and Shah, 2001)

5. Determining key capabilities of a firm (Hafeez, Zahng, and Malak 2002)

6. Selecting next-generation manufacturing (Alvi and Labib 2003)

7.   Developing a design strategy for a re-configurable manufacturing system (Abide and Labib 2003)

AHP has been demonstrated as a powerful and useful method for assisting managers with complicated and difficult decisions. AHP is founded on the following set of axioms for deriving a scale from fundamental measurements and for hierarchical composition (Saaty 1986).

Axiom 1: Reciprocal
If element A is x times more important than element B, then element B is 1/x times as important then elements A.

Axiom 2: Homogeneity
Only comparable elements are compared. Homogeneity is essential for comparing similar things, as errors in judgment become large when comparing widely disparate elements.

Axiom 3: Independence
The relative importance of elements at any level does not depend on what elements are included at a lower level.

Axiom 4: Expectation
The hierarchy must be complete and include all the criteria and alternatives in the subject being studied. No criteria and alternatives are left out and no excess criteria and alternatives are included

        The AHP method consists of three levels of hierarchy. The first hierarchy level is the goal of the decision making, the second level of hierarchy is how each of the existing criteria contributes to the goal achievement, and the last level of hierarchy is to find out how each of the alternatives contributes to each of the criteria.

Figure (3): AHP hierarchy Levels
Source: (s.scribd.com/doc/2908406/Modul-6-Analytic-Hierarchy-Process/21 Juni 2009)
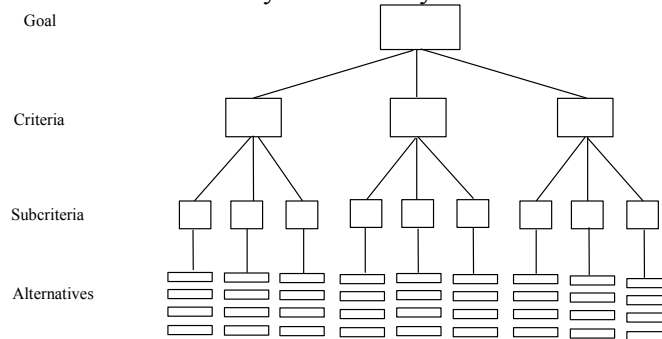
3. Hypotheses/Objectives

This research aims to achieve the following objectives:
Review of current performance management processes to identify gaps, then suggest more efficient and effective processes for performance management, Conduct a comprehensive investigation on Balanced Scorecard and strategy map practices in telecom industry to map the strategy for Paltel Group, recommend a methodology to prioritize Paltel Group strategic objectives which achieve high level of consensus and consistency, determine how the proposed BPM model improves the group decision -making process and business outcomes, and plan to develop a performance measurement model which can be applied in telecom industry in group level, estimate the group accomplishments, and discover the causal-effect relationship among objectives and perspectives.

4. Research Design/Methodology

Paltel Group has implemented business scorecard approach to manage both financial and non-financial perspectives due to the increase in complexity of systems and organizational structures and continuously changing external factors while rapidly expanding its business globally through acquisitions, joint-ventures, and partnerships. Its key four strategies are clearly developed in line with the vision and its own environments, and they are definitely decomposed into each of strategic objectives. Relevant KPIs have been subsequently defined and reported both internally and externally. However, most of measures are associated with the financial perspective and also the absolute values and some other KPIs like ratios not measure in appropriate way. In addition, most of strategic not communicated and aligned with strategies and the absentees for monitoring and controlling for the KPIs and set the suitable weight for each strategy and KPI, Paltel Group does not define clearly the level of local stakeholder involvement in the performance measurement. Moreover, Paltel Group has many documents describing business processes and procedures on a detailed level but processes are not centralized and distributed that affect missing company-wide management of business processes that combined with a structured approach for updates and continuous improvement is missing.

Based on intensive analysis for internal, external and Porter five forces, Paltel Group sought to achieve its objectives by leading the telecommunications and Information Technology (IT) sector. In addition, the Group's commitment to develop its IT infrastructure and introduce the latest global technologies in the service lines; mobile, fixed, and ADSL services. The Group also worked on the development of value added services in order to satisfy all the subscribers' needs and desires. It also worked through its special offers to commensurate with the nature of its subscribers in order to maintain the subscribers base and increase their loyalty on one hand and attract new subscribers and to fulfill their needs on the other. The Group maintains core investment in the IT sector by enriching it with world-class experiences and expertise to remain the leader of this sector. Moreover, Paltel Group remains committed to building the future of technology in Palestine in an effort to place Palestine on the global digital map. Thus, the Group worked hard to enhance its technical performance and broadband services and to provide the latest applications while maintaining the highest levels of security and privacy. In the same context, the Group continued its devotion towards the community and public sector by launching creative initiatives and sustainable development programs ranging from more widespread environmental technology and Internet access to computer literacy. In addition to its social responsibility, the Group has empowered marginalized groups in an aim to have them look ahead for a future filled with all the needed resources to sustain a decent life.

Performance Management Committee (PMC) in cooperation with the researcher studied the current situation and select significant KPI's that affect overall performance and can be measured through information system in the group, and distribute these KPI's into each perspective of BSC. The following section describes each perspective and the KPI's:

Finance Perspective

Financial metrics are very effective and critical measures to monitor business performance. It illustrates how the strategy, implementation and execution contribute to the "bottom line", it summarizes the results of actions taken from the economic point of view. In our case, and based on relative research, benchmarking and consultation from leading firms in this field, we choose five main indicators that affect overall business performance from financial perspective, Paltel Group has a preference of the following performance measures over others:

- Average Revenue Per User (ARPU)
- Return On assets (ROA)
- Return On Equity (ROE)
- Net Profit Margin (NPM)
- Current Ratio (CR)

Customer Perspective

Since nowadays being customer oriented is becoming more and more important for business success, the purpose of defining customer-related KPIs is to get information about business performance from customers' point of view in order to improve their business. From a well-formulated and implemented strategy, Telecommunication industry has evolved and its customers use their mobile phones not only to call but also to access the internet, watch television, play music and take pictures. Paltel Group has focused on customer value enhancement to maintain their loyalty and trust. The following indicators are significant for Paltel Group's customer perspective:

- Customers' Churn Rate
- Customer Satisfaction Index
- Number of Subscribers
- Penetration Rate
- Average Minutes of Usage per User per Month (MOU)

Internal Process Perspective

Internal process enables Paltel Group to meet two objectives, deliver value propositions of customers in targeted market segments and satisfy stockholders expectations of excellent financial returns. The measures should focus on critical processes to achieve customer satisfaction and organizational financial objectives. Measures include cost per subscriber, marketing expense per customer, time to market, service coverage and complaint ratio as illustrated below:

- Cost per Subscriber
- Marketing Expense per Subscriber
- Time to Market (TTM)
- Service Coverage
- Subscriber's Complaint Ratio

Learning and Growth Perspective

This perspective is concerned with identifying the infrastructure that Paltel Group needs for a long-term business improvement and growth, and to achieve appropriate combination of skills and required tools for active atmosphere for sustainable improvements to meet demands of customers and attaining the desired financial efficiencies. Learning and growth is aiming to fill the gap between the existing capabilities of people, information systems and organizational procedures, and what will be required to achieve the further objectives; the gap is identified through financial, customer and business process perspectives. Therefore, the measures are focused on the following indicators:

- Training Expense per Employee
- Full Time Equivalent (FTE)
- Turnover Rate
- Reward per Employee

5. Data/Model Analysis

This chapter presents the application of the AHP method in ranking the overall performance management and provides performance index for the group.

Data Collection

Considering the number of stakeholders in Paltel Group, performance management committee was formulated heading by CEO, to analyze the current situation and to cooperate with researcher to develop the proposed model. The researcher worked with the committee to identify strategic goals through BSC to measure the overall performance. The committee consisted of 15 employees, three general managers, six directors, four managers and two officers. The committee met to prioritize each perspective of BSC, and KPI's using AHP methodology.

The study makes an extensive use of both primary and secondary sources of information from the committee of Paltel Group. The primary sources of data include information which were gathered from the field. The secondary sources of data include Paltel Group's annual reports and brochures. Data on the profile and operations of the Paltel Group, resource base of the company, technological advancement as well as operational challenges and administrative responses of the company were gathered from management and staff of Paltel Group. The proposed methodological framework for conducting the study could be summarized by literature review, Data Collection Techniques, Interviews, Observations, Focus groups, Empirical Survey a questionnaire is designed with a conventional AHP questionnaire format (nine-point scale and pairwise comparison) based on the hierarchy. Fifteen questionnaires were distributed to performance management committee of Paltel Group.

Analytical Hierarchy Process

Data analysis was done by using AHP method using Excel sheet developed by Klaus D. Goepel, http://bpmsg.com. The weight for calculation in AHP method is attained from the questionnaires that have been filled by respondents.

The procedures of AHP to measure business performance involve six essential steps Cheng, 1999; Lee, Kang, and Wang, 2006; Lee, in press; Murtaza, 2003; Zahedi, 1986):

Step1: Define the unstructured problem and state clearly the objectives and outcomes.

The goal is to measure Paltel Group business performance. So, this goal is placed at the top of the hierarchy. The hierarchy descends from the more general criteria in the second level which are the four perspective of balance scorecard which are finance, customer, internal process, and learning. It is important to identify those criteria that are absolutely necessary to adequately define all relevant and important aspects of the goal. Then, we define KPI's for each cluster based on its inherit perspective, as described in the Table (1):

Table (1): BSC Perspectives and KPI's

Goal: Measure Paltel Group business performance

F	Financial perspective	F1	Annual Revenue Per User (ARPU)
		F2	Return On assets (ROA)
		F3	Return On Equity (ROE)
		F4	Net Profit Margin (NPM)
		F5	Current Ratio (CR)
C	Customer Perspective	C1	Customer Churn
		C2	Satisfied Customer Index
		C3	Penetration Rate
		C4	Minutes of Usage
		C5	Number of Subscribers

P	Internal Process Perspective	P1	Time to Market
		P2	Cost per customer
		P3	Market expense per customer
		P4	Service coverage
		P5	Customer complaint ratio
L	Learning and Growth Perspective	L1	Employees turnover
		L2	Training expense per employee
		L3	Rewards expense per employee
		L4	Full Time Equivalent

Step2: Decompose the problem into a hierarchical structure with decision elements (e.g., criteria and alternatives).

When relationships become too numerous or complex for the human mind to intuitively grasp, it may become necessary to organize the relationships into a graphical representation (Saaty, Thomas 2008). For these reasons, construction of the hierarchy is the most critical aspect in the AHP.

With the hierarchy of the problem, appropriately decomposed into actionable elements linked to the highest level goals, it is necessary to gather information as to the impact of the relationships between the various levels. This action performed by PMC through focus groups with the researcher which aims of prioritization matrix which represent the importance values of organization drivers and relationship matrix that gives the mapping between the actionable items in different levels of the decomposition hierarchy.

Figure (4): AHP levels for Paltel Group

Step3: Employ pairwise comparisons among decision elements and form comparison matrices.
One of the crucial steps in decision-making is the accurate estimation of the data. This is crucial because there is the need to extract qualitative information from the decision-maker. It is very difficult to quantify data in terms of absolute values correctly. AHP method attempt to determine the relative importance, or weight, of the alternatives in terms of the importance criterion. Pairwise comparisons are used to determine the relative importance. In this approach, the decision-maker has to express his/her opinion about the value of one single pairwise comparisons at a time.

The judgment in AHP is to define which element is more important in each pair of criteria. The committee using scale for pairwise comparisons shown in Table (2).

For instance, comparing element A against element B, this is the judgment: "How strongly important is element A than element B?".

The ratio assessment is the activity conducted in the second stage, which is done by acquiring opinions from PMC to compare each key performance indicator that has been measured by giving the score 1–9, Table (2). The result from respondents' opinion is then analyze by using the AHP method.

Table (2): AHP fundamental scale

Intensity of Importance	Definition	Explanation
1	Equal Importance	Two activities contribute equally to the objective
3	Moderate Importance	Experience and judgment slightly favor one activity over another
5	Strong Importance	Experience and judgment strongly favor one activity over another
7	Very Strong Importance	An activity is favored very strongly over another; its dominance demonstrated in practice.
9	Extreme Importance	The evidence favoring one activity over another is of the highest possible order of affirmation
2, 4, 6, 8	For compromise between the above values	Sometimes one needs to interpolate a compromise judgment numerically because there is no good word to describe it.

Pairwise comparison for Balance Scorecard perspective:
The committee met to prioritize each perspective of BSC and KPI's, and the result were as shown in Table (3).

The consolidated decision matrix combines all *k* participants' inputs to get the aggregated group result. We use the weighted geometric mean of the decision matrices elements aij_k, using the individual decision maker's weight w_k as given in equation below:

$$c_{ij} = \exp \frac{\sum_{k=1}^{N} w_k \ln a_{ij(k)}}{\sum_{k=1}^{N} w_k}$$

Table (3): Consolidated Pairwise comparison for Balance scorecard

		Finance	Customer	Internal Process	Learning and Growth
$r_i = \exp\left[\dfrac{1}{N}\displaystyle\sum_{j=1}^{N}\ln(a_{ij})\right] = (\displaystyle\prod_{i=1}^{N} a_{ij})^{1/N}$			2	3	4
Finance	1		1.09	1.4	1.69
Customer	2	0.91		1.14	1.81
Internal Process	3	0.72	0.88		1.6
Learning and Growth	4	0.59	0.55	0.63	

Step4: Use the eigenvalue method to estimate the relative weights of the decision elements.

Pair wise comparisons among n elements in each level lead to an approximation of each $a_{ij}=w_i/w_j$ which is the ratio of the weight of element i to element j. The estimated weight vector w is found by solving the following eigenvector problem: $Aw=\lambda_{max}w$, where the matrix A consists of a_{ij}'s, and λ_{max} is the principal eigenvalue of A. If there is no inconsistency between a pair of elements, then a_{ij} is equal to $1/a_{ij}$ for any i and j. The result is that $\lambda_{max} = n$ and we have, $Aw=nw$, where n is the number of elements in each row.

To calculate the w vector (also called the eigenvector) each column of A is first normalized and then averaged over its rows. This vector is used to find the relative importance of each element. Observe that since small changes in a_{ij} imply a small change in λ_{max}, the deviation of the latter from n (the number of elements in a row) is a measure of consistency.

Priorities p_i in each input sheet are calculated using the row geometric mean method (RGMM). With the pairwise *NxN* comparison matrix A = a_{ij}

Calculated By:

Normalized By:

Table (4): Consolidated Eigenvalue Balance scorecard

Balance scorecard Perspective	*Weight*	*Rank*
Finance	30.8	1
Customer	28.4	2
Internal Process	24.4	3
Learning and Growth	16.4	4

Step5: Check the consistency property of matrices to ensure that the judgments of decision makers are consistent.

The consistency of a set of pairwise comparisons considered before we accept the weights generated by this process. Consider the situation proposed earlier where the committee assessed factor one as four times as important as factor two. If the decision maker considered factor two twice as important as factor three, then factor one should be preferred eight times over factor three. This is an example of perfect

$$= \frac{2\sum_{i<j} \ln a_{ij} - \ln \frac{p_i}{p_j}}{(N-1)(N-2)}$$

ength of preference, but perfect consistency is not guaranteed due to the 379), Consistency Index (CI) can be calculated by using below formula:

This is a suitable equation for measuring the accuracy for two reasons. First, small changes to non-diagonal elements in a positive reciprocal matrix will lead to only small changes in the eigenvalues. Second, the n eigenvalues of an n × n matrix with diagonal entries of one will always sum to n. Thus, the more consistent a matrix is, the less the aij entries will deviate from their actual values and the closer will be to n. For different values of n, Saaty and others have computed the Consistency Index for a large number of matrices with random entries and averaged these results to produce the Random Index (RI). Saaty defines the consistency ratio for a matrix as equation below:

$$CR = \frac{CI}{RI}$$

A matrix with a CR value less than 0.1 is considered by Saaty to have acceptable consistency.
Random Consistency Index (RI) can be observed in Table (5) as follows:

Table (5): Random Consistency Index

n	1	2	3	4	5	6	7	8	9	10
RI	0.00	0.00	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49
CGI			0.31	0.35	0.37	0.37	0.37	0.37	0.37	0.37

Source: http://www.people.revoledu.com/kardi/tutorial/AHP/index.html

If CR ≥ 10%, the data acquired is inconsistent
If CR < 10%, the data acquired is consistent
The test of consistency result will be very useful in the AHP method. If the test result is inconsistent (CR ≥ 10%), then the result from the AHP method will be of no use in decision making.
Geometric consistency index GCI is calculated using below equation:

GCI

Description:
n	=	Amount of items compared
wi	=	Weight
ci	=	Sum of column
CR	=	Consistency Ratio
CI	=	Consistency Index
RI	=	Random Consistency Index
GCI	=	Geometric consistency index

Table (6): Consistency ratio Balance scorecard and perspectives

	α	*Lambda*	*GCI*	*CR*
Balance scorecard	0.1	4.007	0.01	0.3
Finance	0.1	5.043	0.04	1.0
Customer	0.1	5.019	0.02	0.4
Internal Process	0.1	5.036	0.03	0.8
Learning and Growth	0.1	4.028	0.04	1.0

Step6: Aggregate the relative weights of decision elements to obtain an overall rating for the alternatives.

BPM dashboard designed to enable senior executives to execute strategy, manage performance, and drive new or optimal behaviors across the group. They are primarily designed to facilitate monthly strategic review or operational planning sessions and help executives collaborate on ways to fix problems or exploit opportunities. BPM dashboard focuses on helping Paltel Group to chart a new strategic direction.

Performance targets have time frames, which affects how KPI's are calculated and displayed. Establish annual targets for key processes and initiatives, to keep employees on track to achieve those long-term targets, Paltel Group can divide time frames into intervals that are measured on a more frequent basis. Targeted improvement each quarter affected by season such as summer as number of visitors increased during this period, groups may back-weight the targets toward the end of the year.

The goals associated with KPIs are known as targets because they specify a measurable outcome rather than a conceptual destination. Ideally, through AHP and collaboration with buy-in can attain more accurate targets. Targets can also be set by a KPI team charged with translating strategic objectives into a performance plan.

The proposed dashboards enables the Paltel group to evaluate performance difference in each period separately. Since the measures used in the model are in different kinds it is nearly impossible to evaluate the observe performance with each other. But in the model, each observed value is normalized according to the goals so that a performance score is calculated which can be used to comparison. Observe the improvements that take place between the measurement periods. Moreover, the capability to calculate a single performance level which indicates the overall performance.

Table (7) shows Priorities BSC perspectives and KPI's based on AHP, include proposed Model.

Table (7): Business Performance Management dashboard for Paltel Group

Goal: Measure Paltel Group business performance

Main criteria	Global Weight	Sign	Sub criteria	Local Weight	Final weight	Rank	Target	Actual	Performance Result	Achievement
F Financial perspective	**30.8%**	F1	Annual Revenue Per User (ARPU)	0.223	6.85%	3	100	94	6.46%	94.00%
		F2	Return On assets (ROA)	0.201	6.17%	7	0.187	0.15	4.97%	80.21%
		F3	Return On Equity (ROE)	0.239	7.34%	2	0.25	0.238	7.01%	95.20%
		F4	Net Profit Margin (NPM)	0.211	6.48%	4	0.23	0.2204	6.23%	95.83%
		F5	Current Ratio (CR)	0.126	3.87%	16	1.5	1.6	4.14%	106.67%
			Finance performance Index is:						**28.80%**	**93.50%**
C Customer Perspective	**28.4%**	C1	Customer Churn	0.188	5.34%	9	0.29	0.34	4.55%	85.29%
		C2	Satisfied Customer Index	0.228	6.48%	5	0.7	0.65	6.01%	92.86%
		C3	Penetration Rate	0.260	7.38%	1	0.72	0.7	7.18%	97.22%
		C4	Minutes of Usage	0.128	3.64%	17	0.8	0.64	2.91%	80.00%
		C5	Number of Subscribers	0.196	5.57%	8	2.7	2.65	5.46%	98.15%
			Customer performance Index is:						**26.12%**	**91.96%**
P Internal Process Perspective	**24.4%**	P1	Time to Market	0.264	6.44%	6	136	142	6.17%	95.77%
		P2	Cost per customer	0.213	5.20%	11	99	124	4.15%	79.84%
		P3	Market expense per customer	0.185	4.51%	13	41	52	3.56%	78.85%
		P4	Service coverage	0.160	3.90%	15	0.95	0.95	3.90%	100.00%
		P5	Customer complaint ratio	0.178	4.34%	14	0.072	0.0608	3.67%	84.44%
			Internal Process performance Index is:						**21.45%**	**87.91%**
L Learning and Growth Perspective	**16.4%**	L1	Employees turnover	0.205	3.38%	18	0.04	0.037	3.63%	108.11%
		L2	Training expense per employee	0.185	3.05%	19	800	731	2.77%	91.38%
		L3	Reward expense per employee	0.324	5.37%	10	20452	19650	5.53%	104.08%
		L4	Full Time Equivalent	0.286	4.72%	12	210	324	3.04%	64.81%
			Learning and Growth performance Index is:						**14.98%**	**91.33%**
			Paltel Group business performance Index is:						**91.34%**	

6. Limitations

The main limitations for this research can be summarized by the following points:

- Sample size: Statistical tests normally require a larger sample size to ensure a fairly complete representation of a population.
- Lack of available and/or reliable data: lack of data or of reliable data will likely restrict this research.
- Access: as the proposed research may contain confidential data, the access is denied or otherwise limited. It will be complicated to gain data from stakeholders, Paltel Group, or access to documents.
- Software capabilities to handle AHP

7. Conclusions

This Chapter covers the final reflections of this thesis. The final result of the analysis presented with respect to the data collected from the company and proposed corrective actions. Also, conclusions and recommendations included in this chapter.

The relative weights for each performance measure constructed in previous Chapter facilitate the development of an index to track the Group's progress in execution its strategy. From the relative weight of each performance measure to the Group's overall goal, we can assess the relative effect of the change in a performance measure from one period to the next on the Group's overall performance. By tracking each performance measure individually, from period to period, and then collectively quantifying the relative effect of the change in each performance measure, we can construct an index to monitor the firm's progress against its mission.

The final weights and priorities obtained from the above application for the selected indicators have been provided in the Table (7). In addition, based on the obtained results from this research, the ranking of BSC perspectives are presented in Table (7). The results of the main criteria in BSC - ranking indicates the first rank for the "Finance perspective" with 30.8%, the second for "Customer perspective" with 28.4%, the third rank for "Internal process perspective" with 24.4% and the fourth rank is "Learning and growth perspective" with 16.4%.

It should be noted that after opinion poll with the Paltel Group's committee to prioritize KPI's based on Table (7) using verbal scales of Cheng Yung and Huwang (1999), each performance indicator is given a quantitative value. Then for each criteria we determine the target and actual performance value and multiply each KPI value with final weight, we then aggregate all values for all indicators and perspectives to calculate the overall performance value for Paltel Group and then the business performance index is: 91.4%.

Therefore, by using the proposed model group, can identify the achievements level for each perspective, in Table (7) Paltel Group's achieved in finance, customer, internal process and Learning and Growth perspectives for each by order, 93.5%, 92.04%, 87.99%, and 91.42% respectively.

Dynamicity environment of telecommunication industry, high-level of competition and increased customers' expectations has made necessity of getting awareness of attaining a comprehensive performance evaluation, confident, trustable and flexible. Paltel Group as a market leader in Palestine, should take advantage of methods and patterns consecutively with the aim of consecutive evaluation and improvement of their performance.

This study found BPM incredible method as it is helps organizations to plan, monitor, analyse, and manage business more effectively by providing a comprehensive view for enterprise. With a shared purpose, a consistent data model, real-time information, easy-to-use tools, and streamlined processes, it's much simpler to align operational procedures with strategy. And through increased insight, make faster decisions and boost performance to achieve business goals.

BPM can help an organization to focus on the key drivers of value as they relate to corporate strategy and specific organizational processes. BPM provides fact-based guidance for value-based decision making. Even more important, it enables a consistent process and framework for evaluating trade-offs related to investment by offering an integrated perspective of past, present, and future performance. By linking planning and forecasting to predictive and dynamic resource allocation, a company can deploy resources more effectively. BPM is a key tool for ensuring that the work employees do every day translates clearly into strategic value. In addition, if a company has a reliable measure of its performance, its executives can easily map that result against the performance of its competitors in the marketplace and quickly and confidently respond.

This research has contributed to providing decision makers with a systematic approach for establishing a visual strategy map with a consideration of the involved causal relationships among KPIs. The BSC strategy map construction framework proposed in this research would be a useful and valuable reference for other organizations, as BSC vary from organization to organization. Strategic analysis is performed to create logical links between the KPIs based on the content of the BSC evaluation criteria that are most appropriate for telecom industry performance.

Based on our research, we can see that strategy map which we built will solve some problems which have been existing in Paltel Group. Therefore we think BSC and strategy map should work together to help company to achieve the strategy goals, and use them in a complementary way.

This research proposes an approach based on the AHP and BSC for evaluating the performance of Paltel Group, The analytic hierarchy is structured by the four major perspectives of the BSC including financial, customer, internal business process, and learning and growth, followed by performance indicators. Because human decision-making process usually contains fuzziness and vagueness, the AHP is adopted to solve the problem.

A well-organized AHP information system is constructed to facilitate the solving process. It is our belief that AHP has reached the compromise and will be useful for many other cases as it has been in the past. In particular, AHP has broken through the academic community to be widely used by practitioners. This widespread use is certainly due to its ease of applicability and the structure of AHP which follows the intuitive way in which managers solve problems. The hierarchical modelling of the problem, the possibility to adopt verbal judgment and the verification of the consistency are its major assets.

In this research we recommend to establish Business Performance Management Office, which actively guide Paltel Group of strategy management or in organizing strategic planning activities, and in developing plans, objectives and performance measures to ensure execution. The main responsibility of this office is to prepare and animate strategic planning workshops, accounting for and managing the expectations of multiple stakeholders involved in the planning process, while ensuring alignment of Paltel Group's direction with business sector and support unit priorities, identifying strategic objectives, key performance indicators, targets, and developing performance dashboards, Effectively monitoring the integrity of results reported, and Preparing and presenting performance dashboards and other strategic performance communications tools, both internally and externally.

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