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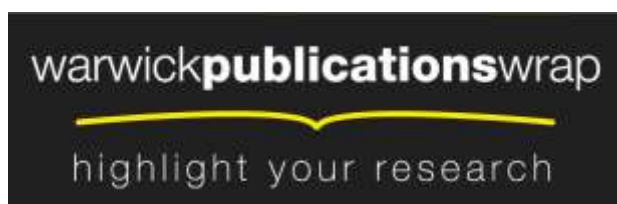
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PERFORMANCE MEASUREMENT SYSTEMS DEVELOPMENT IN A TELECOMMUNICATIONS COMPANY

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Abstract

Developing performance measurement is a necessary element for the effective management of organizations. Performance measurement has been gaining in importance in both operations and management literature. In this paper an evaluation of the development and implementation of performance measures is presented. Investigation of the process from an organizational viewpoint provides insights into the advantages and disadvantages of a strategic activity-based development framework for performance measurement. General issues and implications for the management of performance measurement development and implementation provide some fundamental guidelines.

Introduction

The case study chronicles the implementation of a performance measurement system (PMS) for SkyTel, a paging company in its start-up phase in Malta. The objective of the exercise was to observe the effects of measurement on the company and identify its advantages and disadvantages. The paper describes how lead and lag indicators were selected for the operations monitoring process. A departmental, market driven, activity-based approach was used, extracting operational variables from the company's functional units. The measures were to be directly tied to what the market (customer) viewed as important, with a strong emphasis on the processes (activities) adding value to the customer.

Performance Measurement Requirements

The following perspectives were taken into account in the design phase of the measurement system.

1. Performance measures should permeate the organization's hierarchy. That is, a link between operational measures and strategic objectives should be made and integrated.
2. Measures should link across the organization. In order to be effective the measurement system would have to recognize the merits of the service profit chain, whereby customer relations, quality of service, and employee satisfaction have a direct effect on profits.

3. The monitoring system should monitor the company from a financial performance perspective, customer knowledge and internal business processes. It would have to balance objective and subjective factors. Both tangible and intangible measures need to be integrated.
4. During the design stage companies need to consider the multi-dimensional nature of PMS, in terms of the balance between external and internal factors, possible conflicts between performance measures, and the link between what is being measured and corporate strategy.
5. Avoid looking at the firm from a mechanistic viewpoint. An organization needs to be viewed as a living organism, which needs to be sustained, motivated and provided the opportunity to learn and improve. This issue points to the need for dynamic characteristics of any measurement system.
6. The measurement system should act as a tool to encourage people to be creative, to improve skills, to derive satisfaction, and to produce better results for the company. It should not serve as an instrument to allocate blame, but as a tool to identify problems and to develop solutions.
7. The system should monitor 1) how the company seeks to be a master of a market, for which it seeks customer-satisfying products and services, 2) assess how a company is retaining and developing its expertise of a certain technology, and 3) how markets are being effectively sought.
8. The reporting system would have to be easy to understand and quick to read, and information limited to what is really needed to make operational decisions to optimize market performance.

Organizational Background

SkyTel, in its start-up phase, required a monitoring tool to assess its progress in its first months of operation and organizational life cycle. The company could assess its competence by benchmarking against international standards in the paging industry. A measurement system for producing benchmarking metrics and gauging activities of vital operational functions was needed.

Early on the company was aware of the strict and volatile competitive environment it faced. The paging service was to be introduced in the region after mobile telephony, a reverse introduction of what happened in the United States and other European countries. Managers were concerned with the company's ability to penetrate a difficult telecommunications market. They required a feedback system to highlight progress and indicate fresh opportunities to gain market share.

Cultural Aspects

During implementation of the system, questions arose as to whether differences between Mtel's American culture (Mtel is the American parent company of SkyTel) and SkyTel's Mediterranean culture would be compatible. Another question was how a mechanistic measurement system would fit into a corporate environment that was intrinsically creative and structurally non-restrictive. Such features arose from two factors: the local corporate culture and the fact that this was a start-up operation where norms were still being formalized.

In the literature, even though many authors have considered the influence of geographical or country-specific culture on organizational culture, the findings are still relatively unclear from a research perspective [10]. Since the company was new, and most of management was not set in its ways (established managerial paradigms) in their operations, the people were very adaptable to the introduction of new systems. This type of adaptability is necessary in the Maltese environment since several organizations in Malta are foreign owned and each have their specific culture. Thus, Maltese workers seem to have become more adaptable to these various social cultures. Yet, the adaptability and creativeness involved in entrepreneurial efforts made it difficult to try to impose a tangible, "hard numbers" measurement system. The imposition of a measurement structure may have felt like a limitation to their creativity.

Metric Identification Process

Activities to be measured were selected by their organizational role. The PMS was to represent a balance between what managers think they need, what they really need, and economic feasibility. Managers were interviewed to discover their concern with operational processes and information needs. Special attention was given to upper management's information desires and concerns. The development of SkyTel's PMS was achieved through a systematic approach and framework that secured commitment about how to turn the company and the department's strategies into operational measures.

Identification of Corporate Objectives

The initial stage was to identify the primary corporate objectives. The company was set up a few months earlier. Its primary goals were identified and rated in the following order of priority:

- Establish an efficient operational set up in each department. The tasks included establishing selling strategies, customer policies, the installation of complex telecommunications equipment and the development of engineering procedures.
- Ensure that each department was effectively set up to serve future customer requirements. The demand for future support services was based on records of previous company start-ups.
- Penetrate the market with pager sales at a rate that secures overheads and capital investment.

Departmental Evaluations

The selected company activities can be categorized into four departments: Marketing, Customer Care, Dispatch Bureau, and Operations. A series of workshops was devised with the key management decision-makers of each department. The objective was to identify performance measures for each department, based in the functions and the process flow of activities within the departments. Four sessions were held with each group to address the following subjects:

- Phase 1 - Introductory Session on Performance Measurement Systems. Commitment and trust from management were achieved through discussion of measurement practices across different industries. Managers started to identify how they could benefit from the system in terms of better evaluation of resources and to focus more clearly on objectives for which they were held accountable.
- Phase 2 - Charting of Activity Based Process Flows. Lists of activities, flow charts of work processes and job descriptions were configured and drawn up to describe what goes on within each department. The visualization of the work processes per department had a tangential effect on management. It helped them focus on how the departments were evolving at a time when the company was in its infancy. Managers used the exercise to assess their functional operations and to help it evolve faster.
- Phase 3 - Link Activities with Other Departments. The activities charted in the previous session were examined for overlap of functions between departments. This approach helped managers define accountability for performance more accurately. Furthermore, the departments obtained a clearer picture of how the functions interface with each other, and where co-operation must be strengthened to ensure performance targets were reached.
- Phase 4 - Identify the Key performance Measures. Once the departmental activities were charted the metrics worth measuring were identified. The criteria for selecting the measures were based on the following rationale:
 - The measure selected was for a value-adding activity that was of relevance to the customer. In this way value-adding activities were encouraged and rewarded. The net effect was for people in the organization to reduce non-value adding work in order to increase value-adding operations. Examples of such measures would be: sales patterns, handling of customer queries, and the efficiency of repair services.
 - Key activities, which were not directly value adding, would be included if they were drivers of value adding activities, for example: commissions earned per salesperson and the number of pagers ordered per sales contract. Such measures would act motivate performance and efficiency in the sales force.

During the system building process, comprehensive documentation was generated containing flowcharts of the departments' activities. Figure 1 provides an outline of the contents of this documentation, as well as the overall measurement development process for the marketing department as a sample. A summary of the performance measures adopted within each department is shown in Table 1.

Performance Data Collection and Processing

A standard form was constructed with each department manager. The form contained a list of the relevant performance metrics. At the end of each week the department would complete the forms and dispatch them for processing. The data was translated into tables and charts. The graphs issued were found to be effective tools to monitor the variations in performance. The reports were supplied on a weekly basis. Given that the company was in its development phases, data needed to be supplied frequently, to troubleshoot problems as they arose. Even though they were valuable to management, the forms required repeated updating. This updating was completed on a monthly basis and reflected the changing market environment and the expansion of the company's operation.

Monitoring and Feedback of the Performance Measurement System

An important dimension for any PMS is that it will be dynamic and timely. That is why a critical element of any development process is the feedback loop to and from the developers, managers, and users of the system. To accomplish this phase in the development process observations are made, followed by the implementation of improvements and alterations.

Observation of Effect on the Organization

It is important that a PMS is closely linked to the actual performance of an organization, one of the common sense and fundamental purposes of PMSs that is typically overlooked [11]. As part of this effort the monitoring included an evaluation of how the data was used by top management in strategic decision making. From an operational perspective, the extent to which the reports were understood, and how easily they could be translated into actions, were also measured.

During the implementation phase of the PMS, managers were assisted in understanding the data and developing action plans. When a slowdown in performance was detected, an inter-departmental task force would be assembled to address the problem. A strategic plan of action would be devised to improve performance. In most cases the corrective plans included the implementation of new operational procedures, to improve performance in the short term, and avoid a recurrence of negative performance variance in the long run.

An important and final element of the monitoring and feedback phase was to determine how well the PMS and its purpose have diffused throughout the organization. Specifically, recommendations to assist employee knowledge and acceptance of PMS philosophies were provided. In this stage several discussions were held with the management team to establish how the reports could chart the path towards improving the company's performance.

Findings and Results from the Performance Measurement System

Positive Factors of the Performance Measurement System

1. The reports and measures supplied were concise, accurate and informative. The elements chosen for measurement were appropriate and highly relevant to performance.
2. The company could see itself as it really was, free of assumptions on performance of staff and market penetration.
3. The charting of customers' opinions and levels of satisfaction highlighted the company's strengths and areas for improvement.

4. The organization was measured from all angles via the monitoring of market growth trends, channel analysis, market shares, sales trends, and external demand.
5. All targets were concise and focused.
6. All measures and targets were tied to a given department, its subsections and its staff members.
7. Staff members were aware of their targets to satisfy market requirements.
- 8.

Limitations of the Performance Measurement System

The negative results of the PMS were also evident. The following issues were targeted for improving the system. These observations are lessons that provide insight into what managers should attempt to avoid in a market driven PMS.

1. There was a conflict of 'fit' between the highly structured PMS and the young, rapidly evolving company. From a subjective point of view, the mechanistic characteristics of the reports and performance measures seemed to detract and constrain management's creativity. Creativity may be necessary for effective growth in a difficult and competitive market.
2. Even though the results of the PMS indicated what the weaknesses were, the market and organizational environment did not facilitate the action necessary for improvement. Cultural and organizational constraints limited the effectiveness of the PMS.
3. Personnel found it difficult to relate the marketing oriented targets to what they had to do in their daily routines. Even though there was some effort to diffuse the measures vertically through the organization, this effort was difficult and not completely successful.
4. The corporate culture was starting to focus on operational problems. Thus, the charting of problems on a regular basis could have been de-motivating. Success is sometimes viewed as something employees are rewarded while failure is penalized.
5. Management and personnel required further training to learn how to handle PMS information. If the reports were used ineffectively, a blame culture could emerge within the organization. Once again, the cultural goal of improvement, and not blame-laying, is a difficult barrier to overcome when it comes to the actual utilization of performance measurement outputs.
6. The performance measurement outputs (reports and measures) needed to show more effectively, how the work that was accomplished in the organization affected the customer, or of what value they were to the customer. Customer opinions and feelings were recognized, but the impacts of the actions on the customer were not easily determined.
7. The system lacked the ability to help the organization help itself. It told the company where it was, and where it should be but did not motivate action or create a dynamic environment conducive of change. Clearly, this is a large goal for any system, but provides the lesson that any strategic project in an organization will require a substantial cultural evolution as well.

Conclusion

The challenges that arose with the implementation of the PMS concerned the introduction of a relatively rigid measurement process, within a vibrant evolving company in its start-up phase. Corporate knowledge, structure, and skills were in the process of development. The learning curve within the organization seemed to require a natural period to reach maturity, which could not be accelerated by the performance data reports. If one looks at the issue from Arie de Geus's [12] perspective of corporations as 'living' companies, the organization needs to evolve in response to its surroundings. The organization's response to the performance reports would come at a second stage, when the identity and culture of the company become established.

The PMS was effective in terms of design influence on customer oriented operations procedures. The main lesson learned is that the process could neither be forced into the structure nor rushed to completion. The company would have been identified as being in its adolescent phase in terms of the 'Learning and Growth' perspectives [5]. A natural progression of the operation would be required until it could use the full potential of the more complex PMS. One issue that arose is the need to investigate the "life-cycle" characteristics of an organization and how to model appropriate PMS's for different life cycle stages.

The case study highlights an area of practice and research in performance measurement that requires additional investigation namely: how to integrate a performance system (which is mechanistic and numbers

oriented) with a corporation (which can be viewed as a living and evolving entity). The results could provide valuable insight on how to create and manage viable measurement systems.

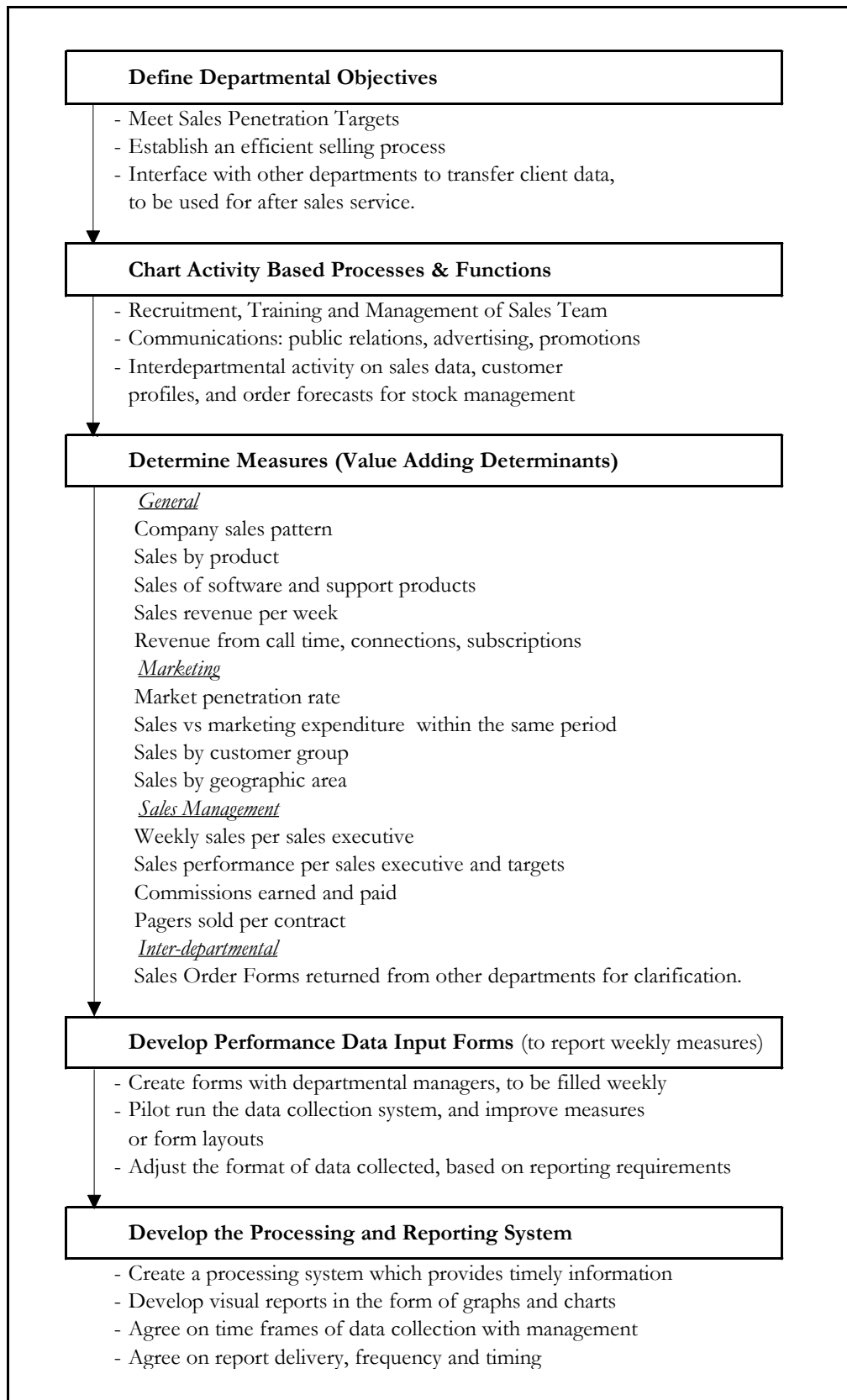


Figure 1: Marketing - Measurement Identification Process

Marketing Department	<p><u>General</u></p> <p>Company sales pattern</p> <p>Sales by product</p> <p>Sales of software and support products</p> <p>Sales revenue per week</p> <p>Revenue from call time, connections, subscriptions</p> <p><u>Marketing</u></p> <p>Market penetration rate</p> <p>Sales vs marketing expenditure within the same period</p> <p>Sales by customer group</p> <p>Sales by geographic area</p> <p><u>Sales Management</u></p> <p>Weekly sales per sales executive</p> <p>Sales performance per sales executive and targets</p> <p>Commissions earned and paid</p> <p>Pagers sold per contract</p> <p><u>Inter-departmental</u></p> <p>Sales Order Forms returned from other departments for clarification.</p>
Operations Department	<p>Network and equipment inspection results</p> <p>Network faults</p> <p>Average call time per subscriber</p> <p>Messages dispatched by source</p> <p>Average number of Messages per subscriber</p> <p>Average call time per subscriber</p> <p>Average message duration</p> <p>Message duration by source</p> <p>Message revenue by type of pager.</p> <p>Stock positions, forecast and stock-outs</p> <p>Pager repairs by type of fault</p>
Customer Care Department	<p>Reported faults by type and source</p> <p>Enquires from clients to the customer care department</p> <p>Visits by clients to customer care centre</p> <p>Calls to customers with low usage, outcome</p> <p>Phone calls made by customer care personnel to clients, issues addressed</p> <p>Meetings held between personnel and clients, issues addressed</p> <p>Disconnections effected, reasons given</p>
Dispatch Bureau	<p>Daily number of Messages processed</p> <p>Messaging time per week</p> <p>Cumulative bureau calls</p> <p>Cumulative Messaging time</p> <p>Bureau and direct Messages per subscriber</p> <p>Bureau traffic per hour</p> <p>No reply and engaged calls.</p>

Table 1: Summary of Performance Measures per Department

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