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ЗАСТОСУВАННЯ ВИПЕРЕДЖАЮЧИХ І ВІДСТАЮЧИХ ІНДИКАТОРІВ ДЛЯ УПРАВЛІННЯ РЕСУРСАМИ У ГАЛУЗІ ІТ-КОНСАЛТИНГУ

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APPLICATION OF LEADING AND LAGGING INDICATORS FOR RESOURCE MANAGEMENT IN IT CONSULTING INDUSTRY

Анотація. Управління ресурсами, орієнтоване на вартість, — це ретельна процедура, яка дає змогу менеджерам повністю використовувати потенціал пулу ресурсів. Мета дослідження полягала в вивченні застосування випереджаючих і відстаючих індикаторів для управління ресурсами в галузі ІТ-консалтингу. Управління ресурсами, орієнтоване на цінності, — головний мотиватор підвищення стійкості та прибутковості бізнесу. Випереджаючі та відстаючі показники є важливими для управління ресурсами, тому процес відстеження KPI слід визначати для всіх груп компаній. Надане дослідження включає підсумок глибинних інтерв’ю з однією з провідних ІТ-консалтингових компаній — SIS, LLC. Зазначено, що успіх у сфері послуг залежить від розміщення відповідних ресурсів у правильних проєктах у правильний час. Для успішного завершення проєкту та задоволення клієнтів цим процесом необхідно ефективно керувати. Було доведено, що ключові показники ефективності — випереджаючі та відстаючі — можна використовувати для управління ресурсами в галузі ІТ-консалтингу з метою оптимізації ресурсів. Ключові показники ефективності залежать від групи, з якою взаємодіє менеджер ресурсів, ключові показники ефективності повинні включати як випереджаючі, так і відстаючі показники, щоб надати повну картину успіху компанії. Якщо дивитися з точки зору бізнесу, централізованого бачення управління ресурсами та використання людських ресурсів немає. Традиційно управління персоналом займається відбором, плануванням кар’єри, програмою виходу на пенсію, мотивацією. Використання людських ресурсів охоплюється проєктним менеджментом, але тільки у межах різних проєктів. Виникає потреба обговорювати використання людських ресурсів у світлі управління ресурсами, особливо це стає вирішальним у галузі IT-консалтингу. У статті було зазначено, що ефективне управління ресурсами покращує ефективність проєкту (більш ефективне, краща маржа, менше перевитрат), краще використання ресурсів, менші витрати на залучення клієнтів і покращує залучення працівників, що призводить до краще утримання потрібних людей.

Ключові слова: управління ресурсами, випереджаючі показники, відстаючі показники, галузь IT-консалтингу, ключові показники ефективності

Abstract. Success in the services sector depends on placing the appropriate resources on the right projects at the right time. For successful project completion and client satisfaction, this process must be managed effectively. Value-driven resource management is a thorough procedure that enables managers to fully utilize the talent of the resource pool. The purpose of this study was to explore application of leading and lagging indicators for resource management in IT consulting industry. Value-driven resource management acts as a major motivator for enhancing the sustainability and profitability of businesses. Leading and lagging indicators are both important for resource management, that is why tracking process of KPIs should be determined with all company groups. Provided research includes summary of in-depth interviews with one of the leading IT consulting companies — SIS, LLC. It was proved that key performance indicators — leading and lagging indicators — can be used for resource management in IT consulting industry to optimize resources. KPIs depends on the group which Resource Manager interacts, key performance indicators should include both leading and lagging indicators to provide a full picture of the company's success. Looking from business perspective there is no centralized vision on the resource management of utilization of human resources. Traditionally human resource management deals with selection, career planning, retirement program, motivation. Utilization of human resource is covered by project management, but only in the frame of different projects. The need to discuss human resource utilization in the light of resource management emerges, especially it becomes crucial in IT consulting industry. The Resource Management Institute and other credible sources have conducted extensive research to support the claim that good resource management improves project performance (more effective, better margins, fewer cost overruns), better resource utilization, lower customer acquisition costs, and improved employee engagement leading to better employee retention of the right people.

Keywords: Resource management, leading indicators, lagging indicators, IT consulting industry, key performance indicators.

JEL codes: M15, O15, M10, M19, P17

Introduction

Success in the services sector depends on placing the appropriate resources on the right projects at the right time. For successful project completion and client satisfaction, this process must be managed effectively. Although incredibly beneficial, it is challenging to maintain.

As more businesses become aware of the numerous advantages of more effectively controlling the supply and demand of human resources, resource management is garnering greater attention across various industries. The restrictions of the covid-19 pandemic have also altered how we typically collaborate, communicate, and provide services, highlighting the strategic nature of resource management [1, 2]. The strategic value of resource management is becoming increasingly obvious since services are the foundation of effective IT solutions, but industry adoption of the necessary technologies to realize that value is lagging.

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Procedures of resource management are a logical progression toward improving employee engagement (at scale). Recent Resource Management Institute studies underline the importance of paying attention to employees' requirements and wishes about their careers and the types of work they would want to accomplish. Finding a balance between the business's financial demands and the needs of the employees can boost employee engagement and, ultimately, help consulting companies keep the best employees [3].

Evaluating a project's success using only a single set of two or three indicators has little impact on today's complex projects and is out of step with the growing demand for industrial performance. Indicators used in project management are also backward-focused (lagging indicators); they assess performance based on data that has previously been recorded (at a milestone, verification focuses on checking whether the project is or is about to be running over budget or delayed). These types of indicators help assess how the project has gone thus far but are not helpful for project management going forward. Use of indicators that can foretell future occurrences and assist the manager in keeping track of the project's progress toward its objectives is an intriguing approach.

The aim of the article is to explore application of leading and lagging indicators for resource management in IT consulting industry.

Literature review. Looking from business perspective there is no centralized vision on the resource management of utilization of human resources. Traditionally human resource management deals with selection, career planning, retirement program, motivation. Utilization of human resource is covered by project management, but only in the frame of different projects. The need to discuss human resource utilization in the light of resource management emerges, especially it becomes crucial in IT consulting industry.

It is essential for IT consulting companies to have 2 different roles — Human Resources Manager [4] and Resource Manager [5]. The primary distinction between these job roles is that a Resource Manager works with employees (and occasionally facilities and equipment) as resources for projects, a Human Resources Manager deals with employees as the workforce of the entire organization. The fact that a Resource Manager works closely with Human Resource Managers is noteworthy.

In the article resource management considers only human resources (employees) as main resource due to unique specialty of IT consulting industry — the main resources in the industry are high-quality personal.

Resource management measures effectiveness of resources, though it has unique key performance indicators which are divided into 2 types — leading and lagging indicators.

Table 1

DIFFERENCE BETWEEN RESOURCE MANAGERS AND HUMAN RESOURCES MANAGERS

Factor	Resource Manager	Human Resources Manager
Goal	Ensuring that there are sufficient resources available to complete the projects	Managing employees of a business
Operational environment	Delivery subset of the whole organization	The whole organization
Main functions	Forecasting resource demand, monitoring utilization rates, matching skills with tasks, solving conflicts that arise, supporting PMs in terms of resourcing	Recruitment, training, engagement, compensation, and benefits, ensuring compliance with company rules, onboarding/offboarding

Source: Authors' ideas [6, 7].

There are not many studies that specifically defining leading and lagging indicators for project success measurement. Leading indicator is essentially a key performance indicator (KPI) that assesses the impact of current activities on the future [8]. The study's definition and justification of leading indicators, however, are lacking [9, 10]. To have a better knowledge of the nature of leading and lagging indicators as well as their features, we explore several definitions of these two types of indicators that are already accessible from different disciplines.

Although leading and lagging indicators have been defined differently by many disciplines, the fundamental idea is the same: leading indicators are proactive measures, whilst lagging indicators are reactive measures. We can infer that lagging indicators have three things in common: they consider past and present performance outcomes, they convey a conclusion based on past and present data, and they are reactive. We also concluded that leading indicators share several qualities, including the ability to predict future performance, identify trends based on historical and current data, forecast outcomes, provide advanced notice, and be proactive [11, 12].

IT leading indicators could be easily used to get resource base readiness according to the business plan, impact the quality or resource pool, or even improve the work-life balance in the company. Leading indicators, specifically, are intended to provide early notice of prospective issues so that preventive measures can be done. They also aid in exposing flaws in an organization's operating procedures or worker conduct before they have an opportunity to hurt the company.

Only when the leading indication offers timely information that can be efficiently put into action are being proactive, preventative, and predictive valuable. It is crucial for leading indicators to actively monitor the state of the safety management system and offer specific information that can be used right away since circumstances that might cause injuries or deaths are time sensitive. Based on Campbell Institute there are 3 categories to classify leading indicators:

- Operations-based leading indicators: Indicators that are relevant to the functioning of an organization's infrastructure (e.g., machinery, operations); potentially site-specific.

- Systems-based leading indicators: Indicators that relate more to the management of an EHS system; can be rolled up from a facility level to a region/business unit or corporate level.
- Behavior-based leading indicators: Indicators that measure the behavior or actions of individuals or groups in the workplace; people-to-people interactions related to supervision and management; useful at site-specific level through management level [13, 14].

Key performance indicators contain leading and lagging indicators for resource management. It is important to understand that leading indicators are about future and help business to foresee following events, when lagging indicators are about past — business can react to actions that took place, but it is impossible to predict them using only lagging indicators. That is why significance of using both leading and lagging indicators are crucial.

Weight of this article is to explore applying of leading and lagging indicators for resource management in IT consulting industry. Case study demonstrates knowledge of 3 groups in SIS, LLC and determines which indicators should be used for resource management.

Methods. The research aims were addressed through a series of group discussions and in-depth interviews with top management in SIS, LLC.

SIS, LLC is a leading provider of Microsoft project management and accounting solutions for contractors and professional service companies. With 20 years of experience and over 300 implementations, SIS has the proven capabilities needed to ensure your success.

For more than 20 years, SIS (Strategic Industry Solutions) has delivered Project and Service industry solutions believing that a company's project success begins with 360-degree visibility, easy access, and accurate reporting of the operational data needed to compete in today's competitive marketplace. To accomplish this, SIS leverages our deep Project and Service industry experience enabled within fully integrated and industry-specific Microsoft Dynamics 365 based solutions [15].

The first gathering of specialists in SIS, LLC was conducted to create a list of leading and lagging indicators for resource management. Following separate discussions, three working groups were formed, and each group added definitions and detailed metrics for the list's major leading indicators. One matrix of major leading and indicators, their definitions, and related metrics was created by combining the work of the three groups. Insights of the in-depth interviews are highlighted in the table 2, describing the creation, use, and analysis of certain leading and lagging indicators inside the company. This article does not aim to present a detailed information presented by interviewers, but to show a short summary of main ideas of it.

Information presented in the table demonstrates that the role of resource management has strategic, operational, and tactical levels, as resource manager interacts with diverse groups across company. In majority of cases resource manager covers delivery group, thus not every group defined the same level of interaction with resource management. Tracking of leading and lagging indicators increases the efficiency of achieving company goals.

Table 2

IN DEPTH INTERVIEWS WITH 3 GROUPS (LEADERSHIP GROUP, DELIVERY GROUP, PROJECT MANAGEMENT GROUP) IN SIS, LLC

Questions	**Leadership group —** Directors of main departments	**Delivery group** — Technical Delivery Managers, Functional Delivery Managers, Workstream Leads	**Project Management Group —** Project Managers, Project Coordinators
1. What is the main goal of resource management and how it interacts with your role?	Resource Management has a strategic role across the company, it should provide a full picture of the resources — how many employees to hire, what is the margin of billable resources. Resource Manager should provide monthly, quarterly, and annual reports with overall billability %, utilization and margin.	During the delivery process on the projects, it should be defined how to perform better. Resource Manager should provide team and/or individual reports with statistics of billability and utilization, as well as Forecasts for projects considering the fact, that most of the resources are working on multiple projects.	Resource Management is crucial to deliver project within time, budget and the scope. Resource manager should resolve resource requests on the project, assign resources and manage their workload to maintain work-life balance. Resource Manager should assign the best resources and foresee the demand before projects' contract are signed.
2. Name Lagging indicators	Delivery Margin % = $ Margin for Delivery group / $ Revenue for Delivery group * 100 %	Billability % = Billable hours / Actual hours * 100 %	Actual to Forecast % = Actual hours / Forecast hours * 100 %
3. Name Leading indicators	Number of ready professional profiles	% Of completed solution and industry training programs = number of resources who completed training programs / all delivery employees	% Of cancelled resource request = cancelled resource requests / all resource requests

Source: created based on author's professional experience during interviews.

Lagging indicators are crucial for Leadership group — during the interviews top managers emphasized overall indicators that can determine the efficiency on the company level across resources. Only Leadership and Delivery group asked for the reports to track the health of resource management, but Project Management described the indicators based on daily routine using PMO metrics which are essential for project performance.

Based on the research it was determined 3 most valuable lagging indicators for resource management:

1. Margin.

Delivery Margin % = $ Margin for Delivery group /
*$ Revenue for Delivery group * 100 %*

Independent professional services companies that are in a stable position must be able to complete tasks profitably. On the other hand, if the services team is a part of a bigger product organization or if the project is meant to be a loss leader, it may be quite fair to deliver projects at a loss. In each of these scenarios, determining whether the projects are being carried out in support of the broader plan depends on properly and consistently evaluating margin percent.

Leadership group highlighted that margin % should be calculated not only across company, but in the unit, team, role levels as well. Top managers are interested in the effectiveness of the business and getting the profit from the operation.

2. Billability.

*Billability % = Billable hours / Actual hours * 100 %*

One of the most fundamental KPIs that nearly all professional services organizations measure is billable utilization. Consulting businesses are designed to convert knowledge-based work (in the form of time) into financial gain. The main indicator of how much of the total time available is used to generate income is billable utilization.

Delivery group pointed out that even slight variations in billable utilization may have a significant impact on how well a services company generates income. A few percentage points more in billable utilization can result in a full week's worth of additional billable hours per consultant each year.

Utilization is valuable when considering the billable workforce, but it is much more valuable when it is looked at for certain subgroups. Resource managers should establish hiring, training, and staff development programs that balance the supply and demand of resources within the business by breaking down usage data by department, degree of seniority, location, or expertise.

Lastly, a corporation may suffer if it places an excessive amount of emphasis on maximizing usage. Burnout may easily result from pushing employees to ever-higher levels of usage. Additionally, businesses need to exercise caution when pressing senior workers to use their time more profitably. This might lead to the neglect of crucial but non-revenue producing tasks like business development, IP investment, or professional development.

3. Actual to Forecast.

*Actual to Forecast % = Actual hours / Forecast hours * 100 %*

Project Management group concentrate on the planning accuracy both internally and externally. Project Managers provide weekly Status Reports to the client, one of the key indicators is percentage of Forecast accuracy. The main responsibility of the Project Managers and Project Coordinators is to effectively predict resource needs on the project.

On the other side, Project Managers and Project Coordinators were concerned about focusing on Forecast Accuracy — IT consulting industry is not that easily predictable, most tasks are tied to the client, in such a case, it is a risk factor and accuracy should not be the only key indicator.

The ability to analyze the projection from a previous period when a significant business decision was taken is frequently also highly beneficial. Was a large purchase order, for instance, made because the forecast that was really being used at the time included a planned promotion that was later dropped? In that instance, a lack of planned synchronization rather than low prediction accuracy was the primary contributing factor.

Leading Indicators were not highlighted as top KPIs for resource management, accent on the lagging indicators was major. Thus, during conversation all group concluded the importance of the leading indicators.

1. Number of ready professional profiles

Number of ready professional profiles has impact on the company's margin. In-depth interviews with Leadership group demonstrated that value of the indicator is essential for Pre-sales process.

Effectiveness of sales process depends on the main resource of consulting company — employees. Creating and optimizing professional profiles are crucial for company's reputation: clients always want to see who will be improving their businesses. Because of this, Resource Manager should not only develop skill set of employees, but to help during Pre-sales process as well.

IT consulting companies should determine the goal for this leading indicator as 100 % of all completed professional profiles for the Delivery team. Once determined — due date should be set with owner of the indicator (e.g., it can be Resource Manager) and tracked on a weekly basis.

2. Delivery training.

% Of completed solution and industry training programs =
= number of resources who completed training programs / all delivery employees

Delivery group pointed on the importance of the training indicator. Considering the fact that FDMs, TDMs and Workstream Leads work closely with junior and middle resources, every manager/lead should understand the level of professionality of the team member to increase team billability eventually.

Junior consultants (Business Analysts, Associate Consultants) are doing almost 50 % of the billable project work, that is why it is essential that they understand the solution implemented for the client and customer's industry. All internal trainings were created based on consultants' experience, because of that we can consider the fact that completion of the project is part of effective performance of junior specialists.

3. Cancelled resource requests

% Of cancelled resource request = cancelled resource requests /
all resource requests

Project Managers and Project Coordinators interact with Resource Manager most of the time, dealing with multiple resource requests, Resource Manager should resolve all of them effectively.

Project Management group suggested to track this indicator which will help to understand the effectiveness of their requests (whether it was clear from the first communication or not) and effectiveness of Resource Manager as a company role. Project Managers have their right hand on the project — Project Coordinators — depends on the trust between them, PMs can assign resource requests to the Project Coordinators or resolve it individually, thus, company's size does not allow to make an effective decision if you are not aware of all resources across company. That is why it is important that PMs and PCs trust a Resource Manager to effectively deal with resource management on the projects.

Resource management takes a crucial part in IT consulting industry, research proved the importance of the resource management. Though KPIs depends on the group which Resource Manager interacts, key performance indicators should include both leading and lagging indicators to provide a full picture of the company's success.

Conclusions. Role of resource management has strategic, operational, and tactical aspects since they engage with many groups within the firm. Since resource managers frequently work with delivery teams, not all groups have the same expectations for their level of contact with resource management. It is crucial to monitor both leading and lagging indicators to assess the efficiency of resource management.

Use of leading and lagging indicators in resource management should be framed by the company's needs. Research demonstrated that different company groups value different leading and lagging indicators for resource management. In-depth interviews made clear which indicators are important for IT consulting industry:

- Lagging indicators describe how company can react on occurred events and helps business understand the state of the past. Main lagging indicators are Margin percentage, billability percentage and Actual to Forecast percentage — which shows how good or bad does business utilize resources.
- Leading indicators describe how company can predict the future and influence on the lagging indicators to improve in advance. Most employees do not highlight leading indicators, it was agreed that it is crucial for resource management. Main leading indicators are number of ready professional profiles, Delivery training and Cancelled resource requests — which help resource managers to track how fast and efficient do resources improve their skillset and proficiency.

Presented leading and lagging indicators can be used in IT consulting industry, especially for companies who provide services for customers by implementing ERP systems. Moving from the industry level, it would be worthwhile to investigate how leading and lagging indicators vary in other specific industries for resource management.

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