

Key performance indicators in professional service firms

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Four major factors affect the performance of project based professional service firms: The ratio of senior to junior staff referred to as the firm's leverage, the average fee charged per unit of time, the percentage of billable time referred to as utilisation, and the profit margin. This paper takes a holistic approach to analysing the performance of a particular professional service firm with respect to these key performance indicators depending on the time senior staff allocates to the following tasks: Project acquisition and delivery, contact and customer maintenance, service innovation and development and hiring junior staff.

Keywords: Professional Service Firms, Business model, Key Performance Indicators, Service Innovation

1 Introduction

Four major factors affect the performance of project based professional service firms: The ratio of senior to junior staff referred to as the firm's leverage, the average fee charged per unit of time, the percentage of billable time referred to as utilisation, and the profit margin (Maister, 1997, p. 32-39). Maister (1997) refers to the first two factors as health factors and the latter to factors as hygiene factors, indicating that to become high-performers firms should concentrate on the health factors.

A number of system dynamics studies have explored the behaviour of professional service firms, mainly concentrating on staff utilisation and leverage: Warren (1998) concentrates on resource dynamics and the implications of quality, Rode (2001) discusses

the reinforcing effects between a firm's reputation and the talents it can attract, Bayer and Gann (2006) discuss bidding strategies and workload dynamics and Kunc (2008) concentrates on finding the right staff ratios to ensure both short term demands (such as developing new business and delivering projects) and long term demands (such as developing junior staff) are met.

This paper contributes by taking a holistic approach that analyses the performance of a particular professional service firm with respect to all of the four key performance indicators leverage, utilisation, fees and profit margin depending on the time senior staff allocates to the following tasks:

- Project acquisition and delivery.
- Contact and customer maintenance.
- Service innovation and development.
- Hiring junior staff.

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The case study reports from the German division of a global professional service firm that is a pioneer and a thought leader in a field of software development known as "Agile software development". The firm has developed its own unique Agile adoption methodology by building on the extensive experience it has accrued over the past eleven years. This approach provides the firm's clients with the momentum and ready-to-use structure needed to "go Agile". In addition, the firm also provide accelerated knowledge transfer and just-in-time learning services.

The firm offers Management Consulting, IT Consulting and Global Sourcing to companies world-wide. The German division focuses on the banking and insurance, the aerospace, the telecommunication and the automotive markets. The currently has over 1100 employees worldwide and over 70 employees in Germany.

This case study was carried out from August 2008 until March 2009. The main participants on the firm's side were the CEO and CFO of the German subsidiary. The head of business development and the branch heads where involved as needed.

Conceptually the firm's business model ("the business idea") operates as follows: The sales process starts with a concrete business opportunity. Both the number and quality of such business opportunities have improved in recent years through access to high-level contacts with budget-making power. Access to these contacts has improved due to both increased market credibility, through a sales partnership with a well-connected individual "rain-maker", and a service partnership with a tool-vendor.

The main driver for business opportunities is the product portfolio of both business and IT consulting services. If all goes well these business opportunities turn into concrete sales objectives and finally into IT solutions projects and business consulting projects ¹.

¹The firm follows the Miller-Heimann sales process as discussed in Miller et al. (2005) and Miller et al. (2005), the terms *Business Opportunity* and *Sales Objective* are used accordingly.

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These projects enable the firm's consultants to improve both their horizontal, technically oriented skills as well as their vertical, domain-oriented skills. These improved skills in turn help increase the firm's market credibility and refine its product portfolio, leading to new business opportunities. A causal loop diagram of this conceptual model is illustrated in Figure 1:

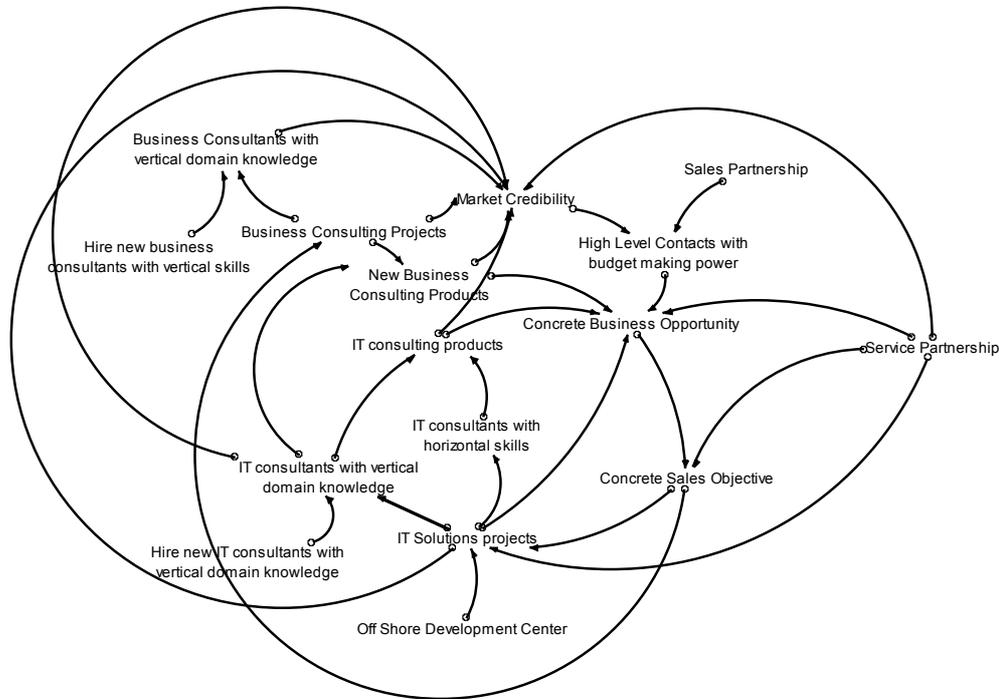


Figure 1: Conceptual model of the firm's business idea

Analysis of the main causal loop shows that the following capabilities are important for the business model to be successful:

- Sales capabilities for business opportunity and sales objective management.
- Consulting skills for service delivery.
- Know-How management, Innovation management and product development skills for creation of up-to-date consulting products.
- Management skills to ensure that products developed match both market requirements and consultant skills.

The firm's main issue in operationalising its business model is how to divide these responsibilities among its senior consulting staff:

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- Should selling be done by dedicated sales specialists, or by the firm’s most senior consultants, the principal consultants?
- Is product development done by principal consultants who work on consulting projects, or by an in-house “think-tank” of senior consultants that have no other responsibilities?
- Whose responsibility is it to transfer new product know-how to more junior consultants?
- Which goals and incentives should be set for the principal consultants?

The firm had been discussing these issues for some time when the study began and was particularly drawn to the ideas discussed by Maister (1997) on managing professional service firms—In particular the formula for the professional services detailed in Maister (1997)[p. 32-39] had been found highly relevant:

$$\begin{aligned}\frac{Profit}{Partner} &= \frac{Profits}{Fees} \times \frac{Fees}{Hours} \times \frac{Hours}{Staff} \times \frac{Staff}{Partners} \\ &= Margin \times Value \times Utilisation \times Leverage\end{aligned}\tag{1}$$

It was quickly decided by the stakeholders that improving the margin was an operative hygiene measure and that business model analysis should focus on the key performance indicators *value*, *utilisation*, and *leverage*. An early analysis—depicted in Figure 2—showed that these KPI’s are highly dependent and that clear policies are needed concerning allocation of principals time to sales, project delivery, innovation and standardisation:

- Utilisation depends both on the effort a typical project has as on the number of consultants involved in a project (the project leverage).
- The project leverage is dependent on product standardisation—if the content of every project is unique then only high-skilled consultants can deliver them, leading to lower leverage.
- The value (fees) that can be generated by a project depends on how innovative the consulting product is.
- High product innovation is detrimental to product standardisation, both at the level of selling the product in a standardised way as at the level of delivering it in a standardised way.
- Standardising products also means that know-how has to be transferred to consultants, which is a further burden on principals time.

Based on the discussion above, the following strategic question was formulated:

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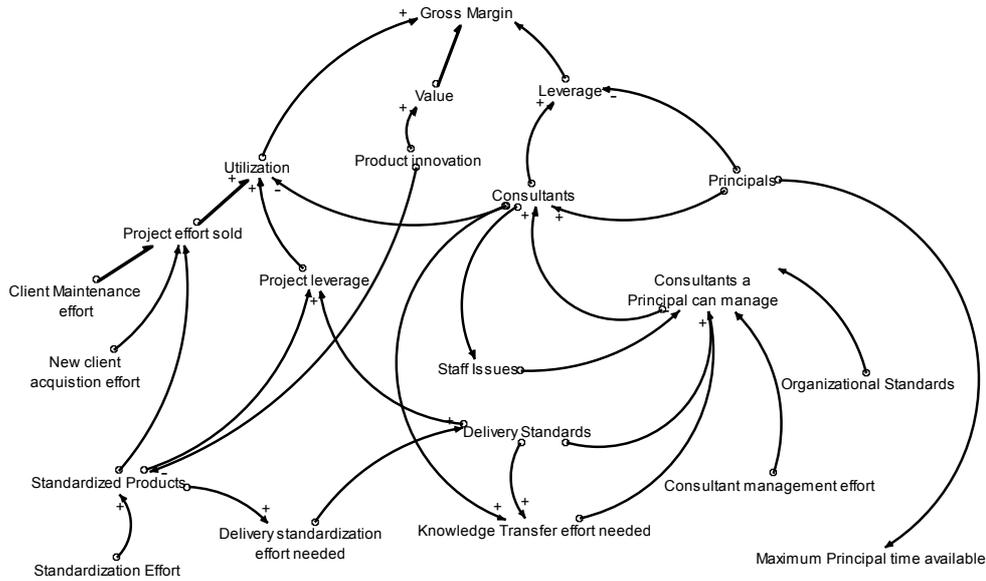


Figure 2: Dynamic interdependencies between KPI's

Strategic Question 2.1 *Which organisational policies should be followed to ensure value is maximised within the firm's business model, and how should these policies be operationalised within the organisation?*

In particular this means finding an answer to how effort should be distributed between the following tasks, given the current market and customer situation:

- Generating repeat business through client maintenance
- New customer acquisition
- Attention to project delivery
- Recruitment and consultant development
- Development of new consulting products

2.1 Products and transactions

The firm's products are IT consulting services that are sold and delivered in the form of projects. Two kinds of projects are distinguished: Fixed price projects and time and material projects. Sales figures show that fixed price projects are much more difficult to

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sell, but they offer better scalability and higher returns due to the increased risk. Time and material projects have better sales figures and are low risk, but mostly consist of a single consultant only and thus offer little scalability.

The company distinguishes between *delivery projects* (which are fixed price) and the time and material *IT consulting* and *Solution* projects. IT consulting projects are low-know-how projects with little profile, solution projects are high-profile, high-know-how projects.

All projects are acquired by heads of branch and principal consultant resources and are delivered by principal consultants (who take the project lead) and consultants. It is a business policy that a principal consultant should not be involved in more than two projects at a time.

The firm's products are shown in Figure 3.

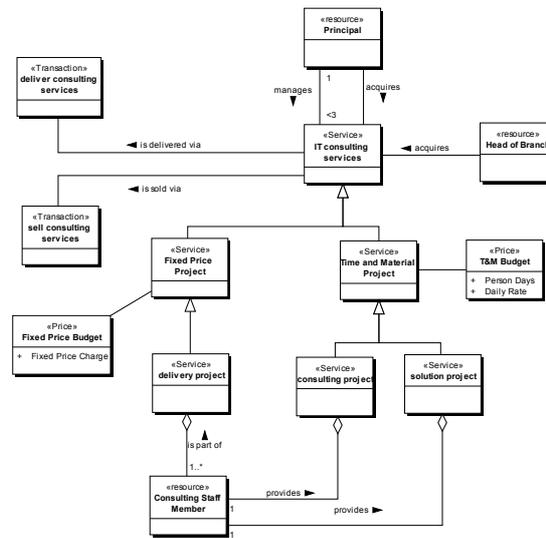


Figure 3: The firm's products

The main transactions the firm engages in are:

Sell consulting services Consulting services are sold by the heads of branch and the principal consultants.

Delivery consulting services Consulting services are delivered by principals and consultants.

Maintain business relationships Consulting services are mostly sold to long standing business relationships. Maintaining business relationships is therefore a core transaction in the business model. Business relationships are maintained by the heads of branch and the principal consultants. Business relationships include contacts who may become customers and all current customers.

Hire consultants The firm works with few freelance consultants, making the hiring process even more important.

Fire consultants The firm has a fairly high fluctuation and so firing consultants is rarely necessary in practise. A firing policy is currently not included in the model.

2.2 Business model dynamics

The dynamic view of the firm’s business model examines how the elements of the structural model (such as customers, consultants and projects) are changed by the business transactions (such as selling projects, hiring and firing consultants) in the behavioural model.

The structural and behavioural model therefore form an important basis for developing and validating the dynamic model.

A high-level overview of the firm’s dynamics is depicted in Figure 4 and briefly discussed here. The details of each module are discussed subsequently:

Principals The principals are the firm’s most senior consultants. Their top priority is writing proposals that bring new revenue. The remaining time is spent hiring and firing consultants, managing and working in projects, maintaining business contacts and creating and standardising new consulting products. Their central role in the business model is evident from Figure 4: The principal module is the only module that is connected to all other modules.

Contacts Each principal maintains a list of qualified contacts, who provide leads that may ultimately lead to new projects and customers—identifying, qualifying and maintaining contacts costs principal’s time, which is then not available for project work and consultant management. If the partners invest too little time in their contacts the number of contacts diminish, ultimately reducing the number of leads generated.

Projects Principals are also responsible for following up on leads, writing proposals and winning new projects. Projects may be won from new customers or from current customers (i.e. new business or repeat business). In the firm’s experience winning a new customer is much harder than winning repeat business from a current customer, a fact that is reflected in the model via two distinct sales pipelines, one for new customers and one for repeat business. The firm just has one product (“consulting projects”)—projects are characterised by total project effort and the average team size deployed.

Consultants Consultants are needed to delivery projects and are hired and fired by a full time recruitment officer, assisted by the principals. The hiring policy is driven by a yearly consultant growth target. This target is set by senior management and is independent of immediate demand for consultants by projects—the target

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is modelled as a constant, the target setting mechanisms are currently not considered. A consultant fluctuation rate is included in the model, consultant growth is constrained by a maximum principal to consultant ratio (the “maximum leverage”).

Customers The customer module discerns between new and mature customers: New customers require a higher maintenance effort, mature customers are more likely to purchase substantial solution projects. Customers are maintained by principals, thus cutting back even further the time principal have for project work. It is assumed in the model that customers have a very long life time.

Products Principals are responsible for product development. This follows a simple process: Innovative ideas that arise in projects are developed into mature, marketable products. Only marketable products lead to consistently high consulting fees. To ensure high leverage in projects (i.e. deployment of more junior consultants as opposed to principals) these products must be standardised and knowledge transferred from principals to consultants.

Value Value is calculated via two gross margins: The *Gross_Margin_I* represents revenues minus direct project costs (which in this model is equivalent to the consultants wages), *Gross_Margin_II* is equal to *Gross_Margin_I* less the sales costs.

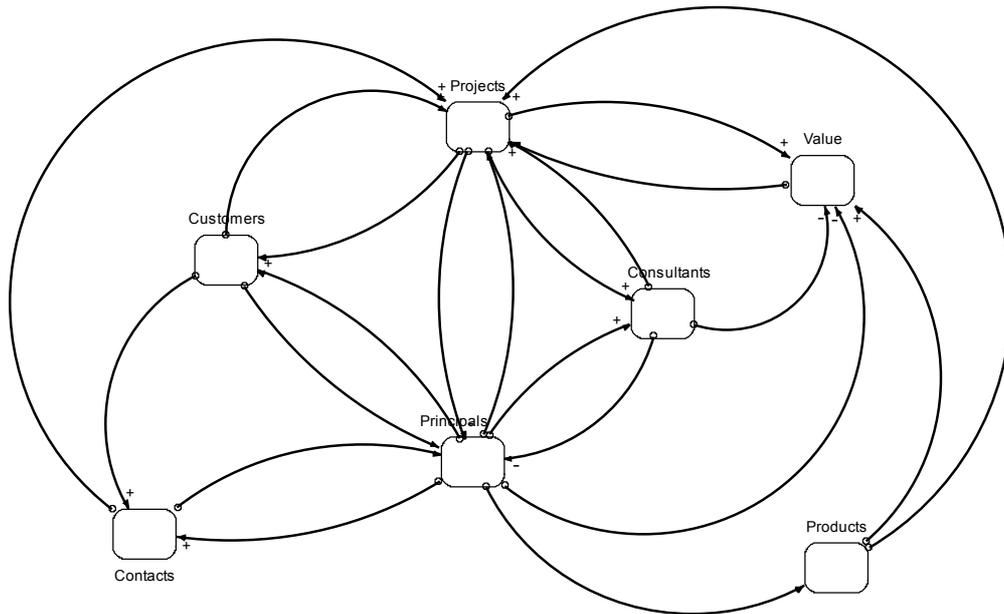


Figure 4: High-Level dynamics of the firm's business model

2.2.1 Principal Dynamics

In the current model, the total number of principals consultants is constant. Currently the firm has fourteen principals (including the four heads of branch) and only 45 consultants in the initial setting—as the desired principal to consultant ratio *Maximum_Leverage* is initialised to 20, this restriction is acceptable and does not affect the analysis:

$$Total_Principals = Principals + Heads_of_Branch \quad (2)$$

The principals are involved in all major business processes, therefore the main task of the principal module is to manage and track principals allocation of effort to these processes. Principals allocate their time according to the following prioritisation:

1. Writing proposals
2. Hiring consultants
3. Working in projects (project management and architectural work)
4. Contact Maintenance (lead generation and client maintenance)
5. Product development

The maximum time principals can allocate is calculated as:

$$\begin{aligned} Max_Principal_Work_Eff &= Total_Principals \\ &\times Average_Principal_Work_Eff \end{aligned} \quad (3)$$

The principals number one priority is to write proposals, in the extreme case they allocate all their time to this task:

$$\begin{aligned} Max_Principal_Proposal_Eff &= \\ &Max_Principal_Work_Eff \end{aligned} \quad (4)$$

In most scenarios the actual time allocated to writing proposals is less, the remaining time is allocated to the next most prior task, hiring consultants:

$$\begin{aligned} Max_Principal_Hiring_Eff &= Max_Principal_Work_Eff \\ &- Principal_Work_Eff \end{aligned} \quad (5)$$

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The remaining time is shared between projects, contact maintenance, and product development. As either of these tasks could be a full time task, the principals have to make a conscious decision concerning their allocation of time between these tasks, leading to the following equations:

$$\begin{aligned} \text{Max_Principal_Project_Eff} = & \text{MAX}(\text{Max_Project_Time_Share} \\ & \times (\text{Max_Principal_Hiring_Eff} \\ & - \text{Hiring_Eff}), 0) \end{aligned} \quad (6)$$

$$\begin{aligned} \text{Max_Contact_Maintenance_Eff} = & \text{MAX}(\text{Max_Contact_Maintenance_Time_Share} \\ & \times (\text{Max_Principal_Hiring_Eff} \\ & - \text{Principal_Project_Eff}), 0) \end{aligned} \quad (7)$$

$$\begin{aligned} \text{Maximum_Product_Eff} = & \text{MAX}(0, \\ & \text{Max_Principal_Hiring_Eff} \\ & - \text{Principal_Project_Eff} - \text{Contacting_Eff}) \end{aligned} \quad (8)$$

These dynamics are illustrated in Figure 5.

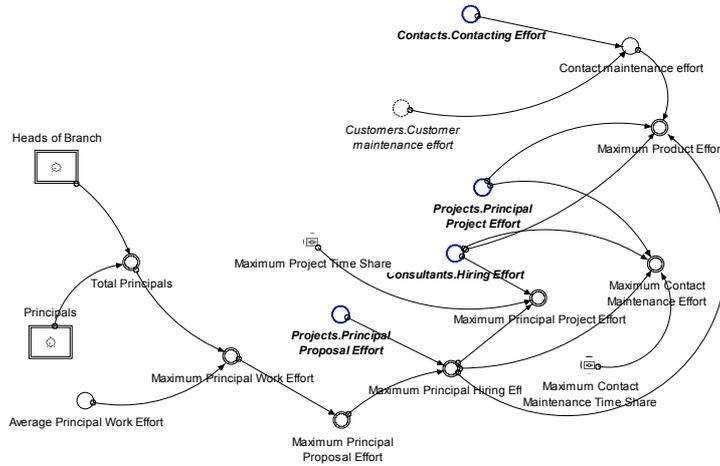


Figure 5: High-Level dynamics of principal submodule

2.2.2 Contact Dynamics

Contacts are the basis for lead generation. They follow a fixed life cycle: First they need to be identified. At this stage a contact is literally just that: contact information belonging to a person that may be a potential client of the firm. Identifying contacts takes

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time (duration)—the effort is not accounted for separately though, as contacts are mostly identified while performing other activities (such as working in projects). In the current model the only source for new contacts are new customers, as most new contacts are made within projects. Other sources could easily be added, but this does not seem necessary as there is no bottleneck here. Once contacts have been identified, they need to be qualified: Not all contacts are potential new customers. Contact qualification requires conscious principal effort and is therefore constrained by `Max_Contact_Qualification_Rate` (which in turn depends on the time principals have available for contact maintenance) and takes a minimum amount of time `Min_Qualification_Dur`. Only a certain fraction of identified contacts `Contact_Qualification_Frac` actually qualify. These leads to a dynamic qualification rate `Contact_Qualification_Rate`. This rate is constrained by the fact that a principal can only manage a limited amount of qualified contacts (`Max_Qualified_Contacts_Per_Principal=50` in the initial setting).

To remain qualified contacts require principals maintenance time, otherwise they fall back to the identified stage. Identified contacts also have a finite lifetime, defined by `Identified_Contact_Lifetime`.

These dynamics are illustrated in Figure 6.

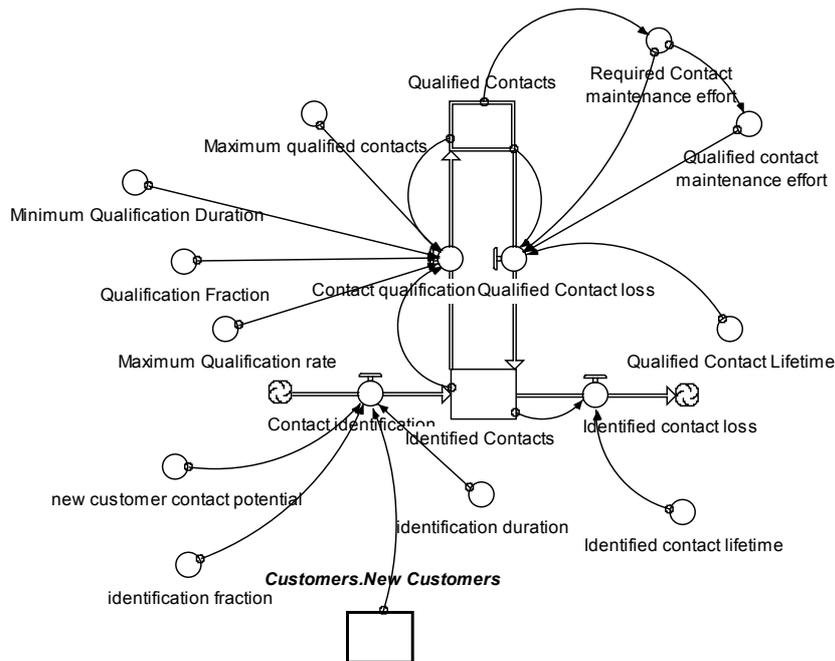


Figure 6: High-Level dynamics of contact submodule

2.2.3 Project Dynamics

The project dynamics module is by far the most complex module of the dynamic model: It contains three separate project acquisition and delivery chains (one chain for each product: delivery projects, solution projects and consulting projects) and the accounting mechanisms that track the effort needed from consultants and principals during project acquisition (e.g. writing proposals) and project delivery. Structurally the chains are identical, but the actual acquisition and delivery rates differ for each project type and are matched to the firm’s sales figures with respect to these project types. The structure of the model will be described here using the project chain for delivery projects.

The project chain models the life-cycle of a project beginning at the initial lead, which turns into a concrete proposal, then into a project that has been won, and finally into a project that is delivered and completed.

The chain has two parallel sub-chains: One sub-chain is for projects that are won from new customers (“first time customer sub-chain”), the second sub-chain is for projects that are won from mature customers (“repeat customer sub-chain”).

The lead generation rate for first time customers $First_Time_Delivery_Lead_Generation$ depends directly on the current number of $Qualified_Contacts$, the fraction of leads generated from these contacts $First_Time_Delivery_Lead_Fraction$ and the time it takes to generate these leads $First_Time_Delivery_Lead_Generation_Duration$.

There are two further influences to the first time lead generation rate: The $Lead_Generation_Pressure$ and the $Effect_of_Delivery_Project_per_Principal$:

The $Lead_Generation_Pressure$ represents the idea that the pressure to generate leads goes down once the targets set by management are achieved. In this case case the incentive to generate leads is a financial reward that is not capped—therefore there is always an incentive to generate more leads. For this reason $Lead_Generation_Pressure$ is set to 1 in this model.

The $Effect_of_Delivery_Project_per_Principal$ arises due to the fact that the number of projects a principal can manage cannot become too large and is set to

$$Effect_of_Delivery_Project_per_Principal = \text{MAX}(0, \text{MIN}(3 - 2 \times Delivery_Project_per_Principal, 1)) \quad (9)$$

This ensures that the incentive to generate new leads goes down once each principal is responsible for one delivery project on average.

Leads must be further qualified to get to the next stage in the sales process, delivering proposals. Qualifying leads does not require any effort, but the qualification process has a fixed duration of $Delivery_Lead_Closing_Duration$ days. Of course not all leads actually reach the next stage—only the fraction defined by $First_Time_Delivery_Lead_Success_Fraction$ do. This is a constant that is set using historical values derived from the firm’s sales figures.

Once a project has reached the proposal stage, a large amount of principals effort is required to move things forward and actually win the project: The less time principals

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can invest in writing and closing proposals, the longer this process will take. As writing proposals is the principals top priority, the time a principal can invest on a proposal only depends on how many proposals he is currently involved in, i.e. the share of his proposal time he can devote to a particular proposal, $Delivery_Proposal_Effort_Share$. This effort share is calculated as the share of effort required for delivery proposals compared to the total effort required for proposals:

$$Delivery_Proposal_Effort_Share = \frac{Required_Delivery_Proposal_Effort}{Required_Proposal_Effort} \quad (10)$$

$$Principal_Delivery_Proposal_Effort = Principal_Proposal_Effort \times Delivery_Proposal_Effort_Share \quad (11)$$

The dynamics of writing proposals are illustrated in 7: Depending on the $Delivery_Lead_Success_Rate$ and the $Effort_per_Delivery_Proposal$ the effort required to close all proposals accumulates in the stock $Delivery_Proposal_Effort$.

$$Required_Delivery_Proposal_Effort = Delivery_Lead_Success_Rate \times Effort_per_Delivery_Proposal \quad (12)$$

$$Principal_Proposal_Effort = MAX(MIN(Required_Proposal_Effort, Principals.Maximum_Principal_Proposal_Effort), 0)$$

The more effort $Principal_Delivery_Proposal_Effort$ that Principals invest into writing proposals the faster proposals are written and closed:

$$Delivery_Proposal_Writing_Rate = \frac{Principal_Delivery_Proposal_Effort}{Effort_per_Delivery_Proposal} \quad (13)$$

But the closing rate $Delivery_Proposal_Closing_Rate$ does not only depend on the time principals have available: There is also a fixed minimum duration $Minimum_Duration_Per_Delivery_Proposal$ involved. This variable depends on many exogenous influences and is therefor set to a constant of 40 days.

$$Delivery_Proposal_Closing_Rate = MIN(Minimum_Duration_Per_Delivery_Proposal^{-1}, Delivery_Proposal_Writing_Rate) \quad (14)$$

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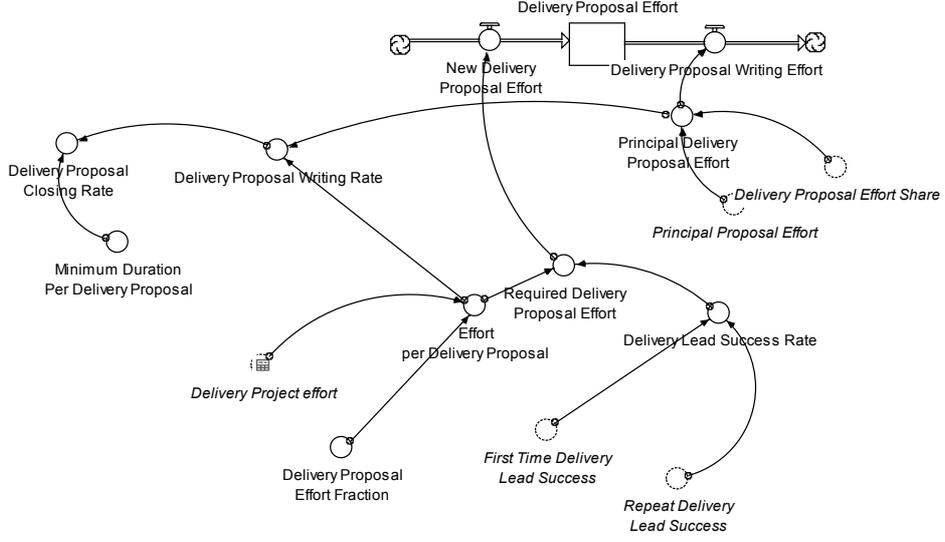


Figure 7: Dynamics of writing proposals

In addition, only a constant fraction `First_Time_Delivery_Proposal` success fraction of projects are actually won. This constant was again derived from the firm's sales figures.

Once projects are won, they wait `Average_Time_To_Delivery_Project_Start` time until they are started. Then delivery commences and proceeds at a rate `Delivery_Project_Completion_Rate`.

Project acquisition and delivery dynamics are illustrated in Figure 8.

The delivery rate `Delivery_Project_Delivery_Rate` depends on how much delivery capacity is available (i.e. how many consultants are available for project work), and how much of this capacity is devoted to the current project.

The maximum delivery capacity `Maximum_Delivery_Rate` is determined by the number of consultants and principals available for project work.

$$\begin{aligned} \text{Maximum_Delivery_Rate} &= \text{Maximum_Consultant_Work_Effort} & (15) \\ &+ \text{Maximum_Principal_Project_Effort} \end{aligned}$$

The actual delivery rate may be smaller than maximum capacity though: Depending on how many projects are in the pipeline, the current demand for consulting power `Demand_Delivery_Rate` may be smaller than the current capacity:

$$\begin{aligned} \text{Actual_Project_Delivery_Rate} &= & (16) \\ &\text{MAX}(\text{MIN}(\text{Maximum_Delivery_Rate}, \text{Demand_Delivery_Rate}), 0) \end{aligned}$$

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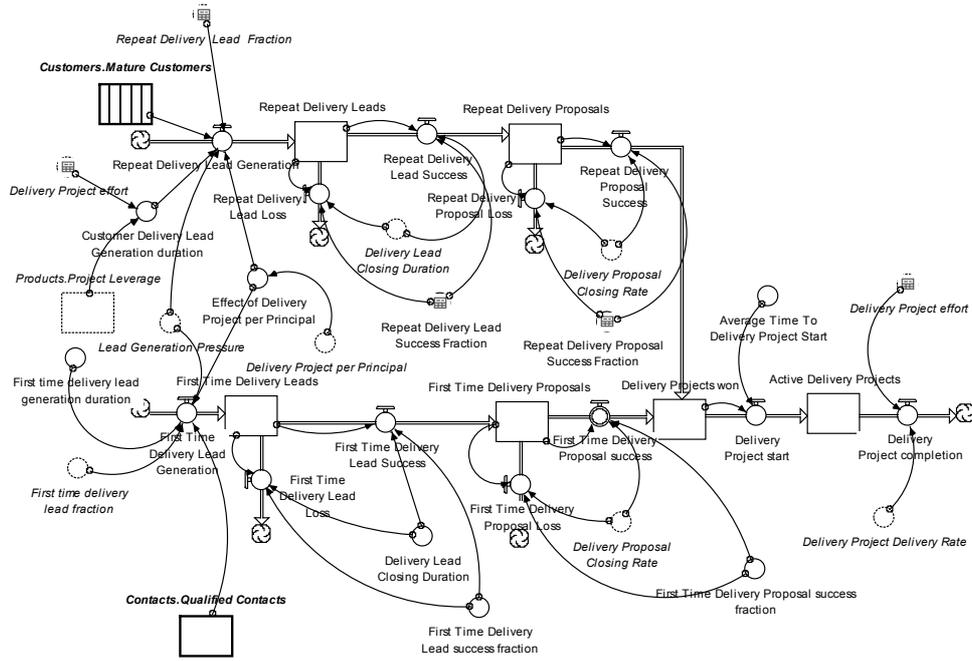


Figure 8: High-Level dynamics of project acquisition and delivery

The demand delivery rate is simply calculated from the staff requirements for each project category:

$$\begin{aligned}
 \text{Demand_Delivery_Rate} &= \text{Average_Work_Rate} & (17) \\
 &\times (\text{Delivery_Projects_Staff_Needed} \\
 &+ \text{Consulting_Projects_Staff_Needed} \\
 &+ \text{Solution_Projects_Staff_Needed})
 \end{aligned}$$

In practice, projects mostly begin even if full man-power is not yet available, so it is acceptable to allocate delivery capacity evenly between projects. So, putting all this together, the *Delivery_Project_Completion_Rate* can be modelled as follows:

$$\begin{aligned}
 \text{Delivery_Project_Completion_Rate} &= \text{Actual_Project_Delivery_Rate} & (18) \\
 &\times \frac{\text{Delivery_Projects_Staff_Needed}}{\text{Total_Project_Staff_Needed}}
 \end{aligned}$$

Project effort accounting structures are illustrated in Figure 9.

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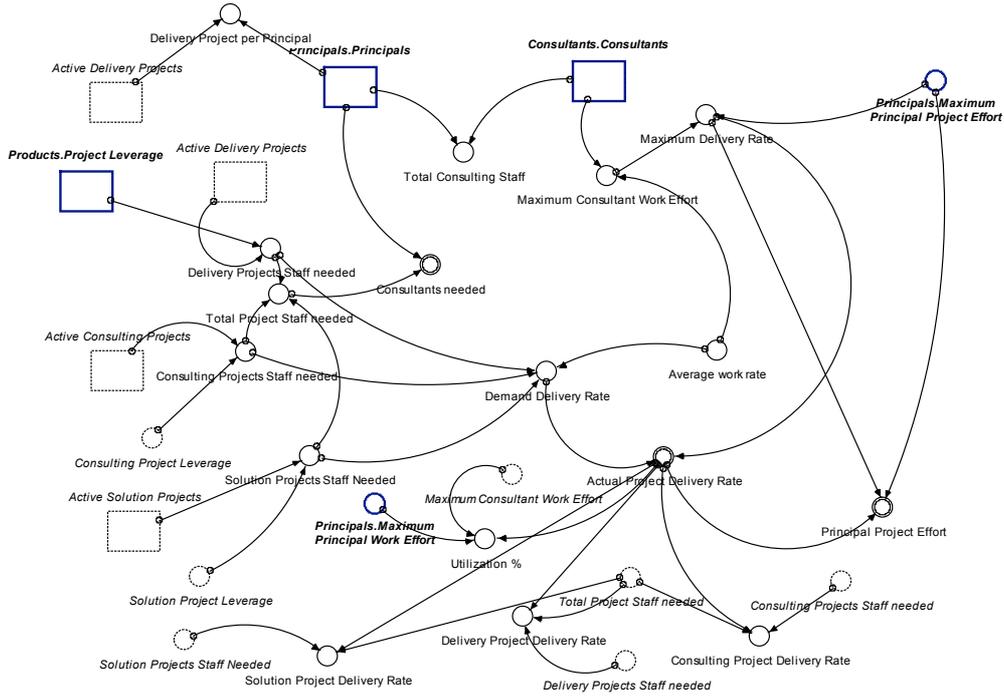


Figure 9: Project effort accounting

2.2.4 Consultant Dynamics

Consultant dynamics are simple compared to the project dynamics:

The initial number of consultants is set to 45, the number of consultants varies according to the fluctuation rates and hiring rates. Active firing of consultants is not considered in this model, as this rarely occurs in practice.

The fluctuation rate is a constant that is set to 20% per year. The hiring rate depends on a number of factors: The firm sets an annual consultant growth target which is also a constant of 20% per year in the current model. Another factor influencing the hiring rate is the number of consultants needed due to projects that have already been sold—this factor `Consultants_Needed` is defined in the projects module.

The next factor influencing the hiring rate is the maximum consultant leverage `Maximum_Leverage` a principal can achieve: This represents the number of consultants a principal can manage next to his client maintenance and project acquisition and delivery effort. Currently `Maximum_Leverage` is set to 20 (at least two senior consultants and up to 18 junior consultants).

Finally the hiring rate also depends on the average time it takes to hire a new consultant, defined by `Average_Hiring_Duration` in the model. This constant value is set to 60 days in the model.

$$Hiring_Rate = MAX(MIN(MAX(Consultant_Target, Consultants_Needed), (19)$$

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$$\begin{aligned}
 & \text{Principals} \times \text{Maximum_Leverage}) \\
 & - \text{Consultants}, 0) \\
 & \times \text{Average_Hiring_Duration}^{-1}
 \end{aligned}$$

Consultant dynamics are illustrated in Figure 10.

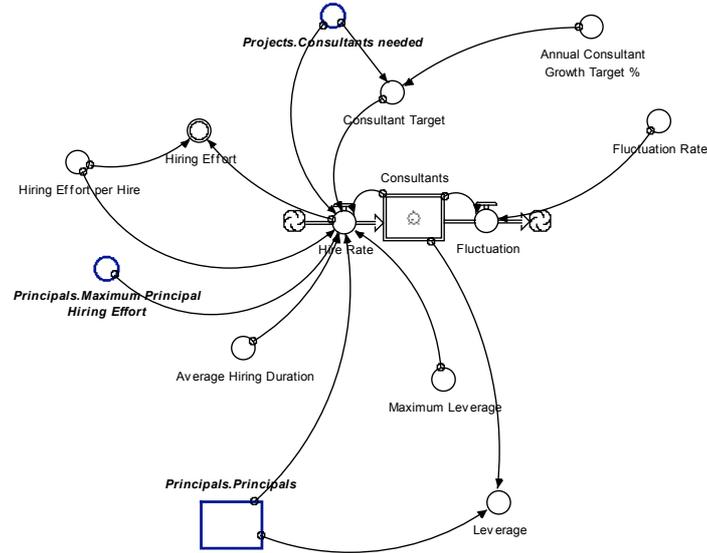


Figure 10: Consultant dynamics

2.2.5 Customer Dynamics

Customer dynamics are kept simple: The model differentiates between new customers and mature customers. The differentiation is necessary because some services (such as delivery projects) cannot be sold to new customers.

A new customer is recorded every time a service is sold successfully to a new customer. Effort must be spent on customer maintenance to ensure customers are not lost. New customers that are successfully retained become mature customers after the `MATURING_DURATION`, whose initial setting is 216 days (i.e. one year).

Once customers are mature they again require maintenance effort to ensure they are not lost. Customer maintenance is done by principals. Their maximum time available for contact maintenance is allocated between new and mature customers proportionally.

Customer dynamics are illustrated in Figure 11.

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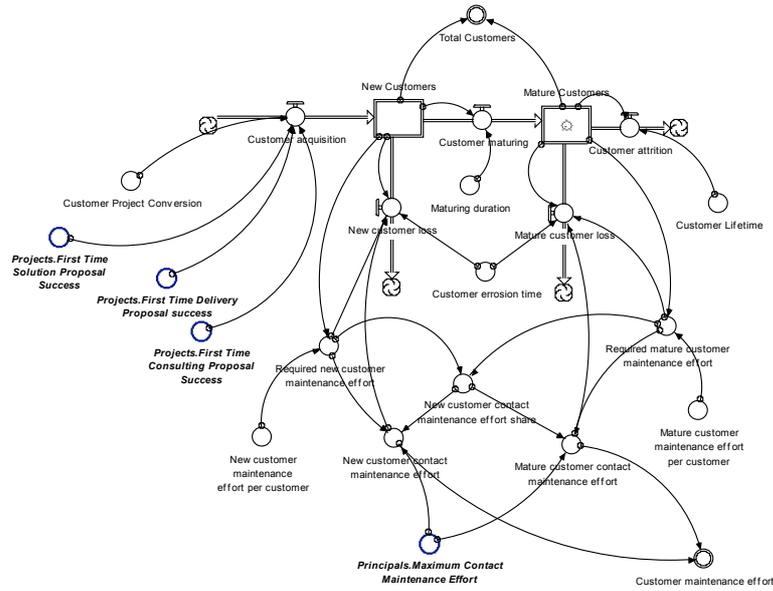


Figure 11: Customer dynamics

2.2.6 Product Dynamics

Product (or service) innovation is the responsibility of the principal consultants. The product life-cycle follows a simple pattern which is modelled as a product development chain: New ideas are considered innovation products. Some ideas are rejected, others are developed into Marketable_Products. Marketable products are products that can be marketed to customers and can be delivered by the principals involved in product development. To ensure high leverage in projects these products must be standardised into Standardized_Products.

Creating an innovation product requires effort, determined by the constant Required_Product_Innovation_Effort. Depending on the time Product_Innovation_Effort principals allocate to product innovation, the innovation rate is calculated as

$$Product_Innovation_Rate = \frac{Product_Innovation_Effort}{Required_Product_Innovation_Effort} \quad (20)$$

Similar equations hold for product development and standardisation rates. Depending on the typical *Product_Lifetime*, products become obsolete.

A simple model of the product life-cycle is illustrated in Figure 12. Though the firm's product development process is not formalised, this fits well into processes described in literature (Young, 1961, p. 249). In the current model only the time required by principal consultants is considered, time required by consultants for training is omitted.

On the basis of the product life cycle two key performance indicators can be determined:

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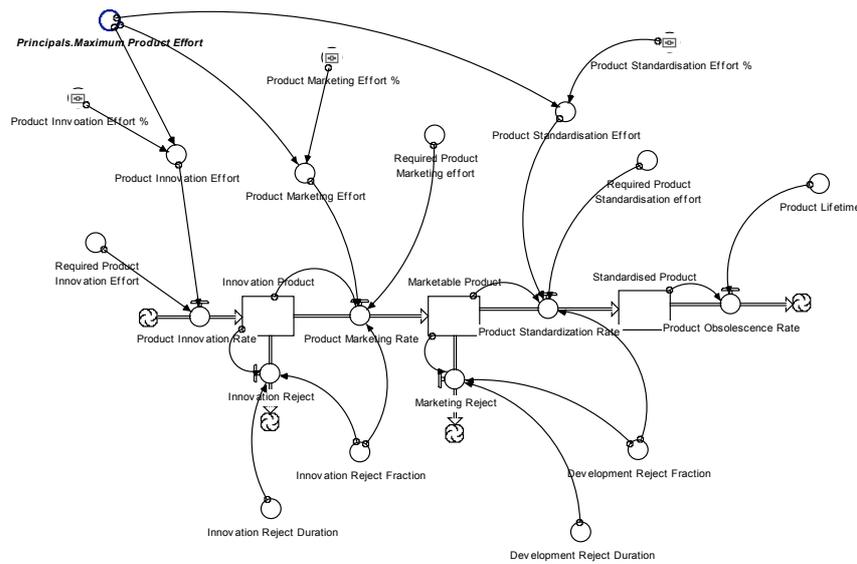


Figure 12: Product dynamics

Time to market This measures the average time it takes from the conception of an innovative idea to the creation of the marketing materials and reference projects that are needed to successfully sell projects based on the idea.

Time to standardisation This measures the average time it takes from the conception of an innovative idea to the creation of training materials and the training of junior consultants that is necessary to ensure projects based on the new idea can be delivery by junior consultants.

It is assumed that the time to market of innovative ideas has an effect on the average consulting fee that can be realised by the firm, and that time to standardisation has an effect on the project leverage—these causal effects are mentioned in Maister (1997, p. 38) and are part of senior staffs mental model, but no thorough analysis or study showing this effect could be found in literature. A recommendation was made to senior management to set up a measurement program to validate the model.

The effect of time to standardisation on project leverage was modelled as illustrated in Figure 13: Project leverage is modelled as a stock that can fall as low as *Minimum_Project_Leverage* and rise as high as *Maximum_Project_Leverage*, depending on the flows *Leverage_Win* and *Leverage_Loss*. If *Time_to_standardisation* is too long, then *Leverage_Win* is zero and *Leverage_Loss* is positive, leading *Project_Leverage* to diminish at a rate determined by the *Project_Leverage_Adjustment* time. But if *Time_to_standardisation* is short (smaller than a constant defined by *Time_to_standardisation_excellence*), then *Leverage_Win* is positive and *Leverage_Loss* is zero. So when

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$$Time_to_standardisation < Time_to_standardisation_excellence \quad (21)$$

this leads to the following equation for *Leverage_win* (the equations for *Leverage_Loss* are the exact opposite):

$$Leverage_win = MAX((Maximum_Project_Leverage - Project_Leverage)/Leverage_adjustment_time, 0) \quad (22)$$

The fee level dynamics are modelled analogously.

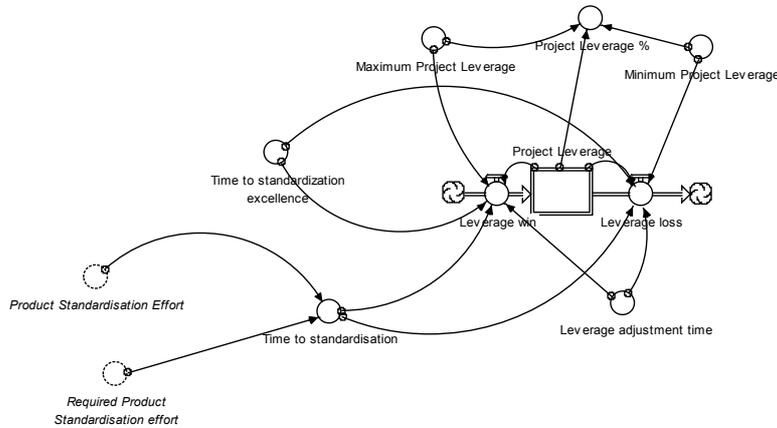


Figure 13: Project leverage dynamics

2.2.7 Value Dynamics

The value generated is calculated via two gross margins—*Gross_margin_I* and *Gross_margin_II*—via the following formulae:

$$Gross_Margin_I = Revenue - Consultant_Cost \times \left(1 + \frac{Travel_Expense_%}{100}\right) \quad (23)$$

$$Gross_Margin_II = Gross_Margin_I - Sales_Cost \quad (24)$$

The revenue is accumulated daily from the consultant fees earned in project delivery. The consultant costs are accumulated from daily principal and consultant wages and the monthly bonus. The sales cost is accumulated from daily head of branch wages.

2.3 Scenarios

Matching the strategic question three scenarios were developed that differ according to how principals allocate their time to their main tasks: writing proposals, hiring new consultants, working in projects, maintaining customers and developing new products.

2.3.1 Scenario 1—Base Case

The objective of the base case is to ensure the model is calibrated to match the reference mode, which was chosen to be the firm’s revenue development in recent years. In this scenario, principals devote their time to writing proposals and hiring consultants as needed. They spend up to 50% of their remaining time working projects, again as needed. Of the time remaining up to 50% is spent maintaining contacts. All of their remaining time is then spent on product innovation, with no time spent on creating marketing materials and standardisation.

Once the model has settled into steady behaviour the principals spend over 40% of their time working in projects, around 20% of their time on product development, and another 20% maintaining current customers. Just under 10% of their time is spent on writing proposals, the remaining few percent on contact maintenance and hiring new consultants. This behaviour is shown in Figure 14

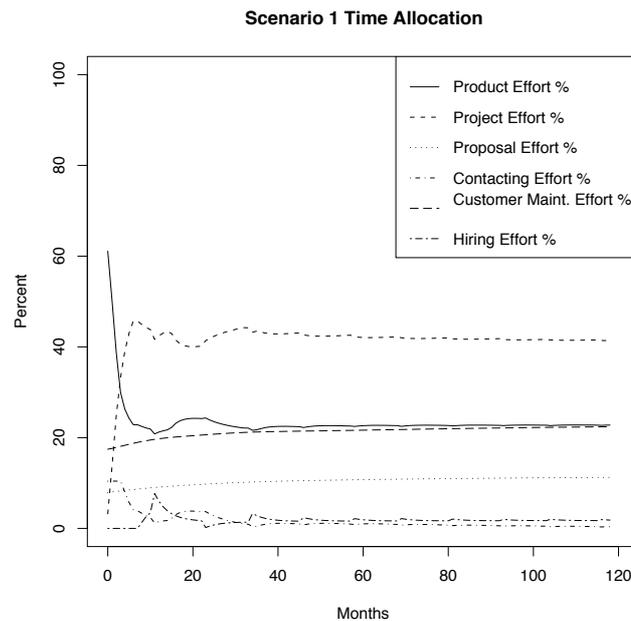


Figure 14: Scenario 1 Time Allocation

The resulting financial performance over a time period of ten years is displayed in Figure 15: Once the model has settled into a steady state the revenue growth rate

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is less than 6% per annum. This is mainly due to the fact that the company relies almost exclusively on maintaining current customers and does too little in acquiring new customers. Project leverage is also low due to the fact that no time is spent on product standardisation. As a result projects are mostly only staffed by one consultant (a service commonly referred to as “body leasing”).

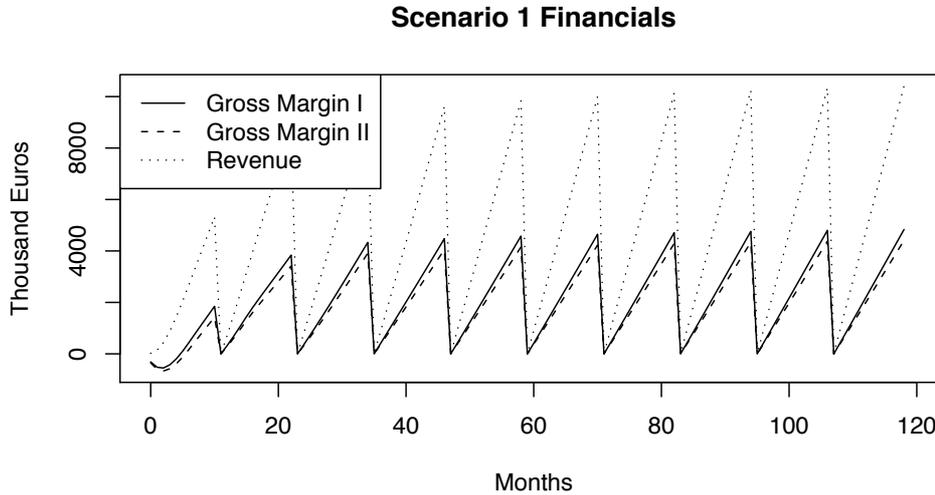


Figure 15: Scenario 1 Financial Performance

The resulting Maister KPI's are displayed in Figure 16: Overall utilisation is good (over 80%), but leverage is low (around 20% of the maximum leverage) and both the average consulting fee as the project leverage remain at 0% (of the maximum consulting fee and project leverage respectively). Speaking in terms defined in (Maister, 1997, p. 32), the company is concentrating too much on the hygiene factors utilisation and margin and not on the health factors consulting fees and leverage.

2.3.2 Scenario 2—Concentrate on the Customer

In this scenario management implements new policies concerning principals time allocation: principals now spend no time at all earning fees in projects, but concentrate 100% of their time on client and contact maintenance. Their behaviour regarding product development is left unchanged.

This change in policy is reflected in the actual time allocation behaviour as displayed in Figure 17: Contact maintenance time is now stable at around 10%. As expected time spent on writing proposal's increases steadily, leading to new clients and more and more time spent on client maintenance. This leads to new client's and the resulting growth means there is a yearly peak in time spent hiring new consultants. The growth also means that less and less time is available for product development.

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Scenario 1 Maister KPIs

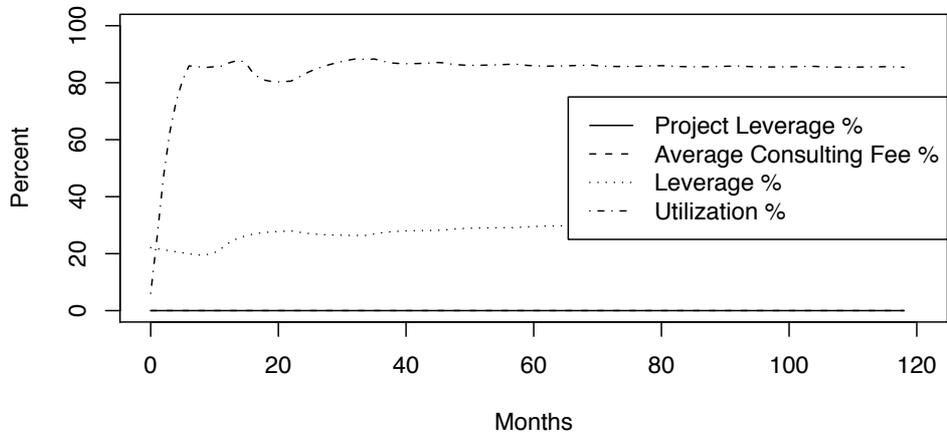


Figure 16: Scenario 1 Maister KPIs

Scenario 2 Time Allocation

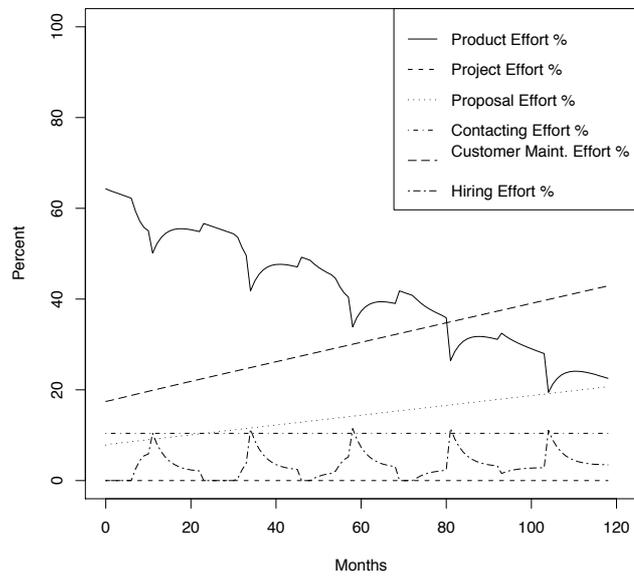


Figure 17: Scenario 2 Time Allocation

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The resulting financial performance is displayed in Figure 18: Once the company settles into a steady behaviour revenue grows steadily at around 15% per annum.

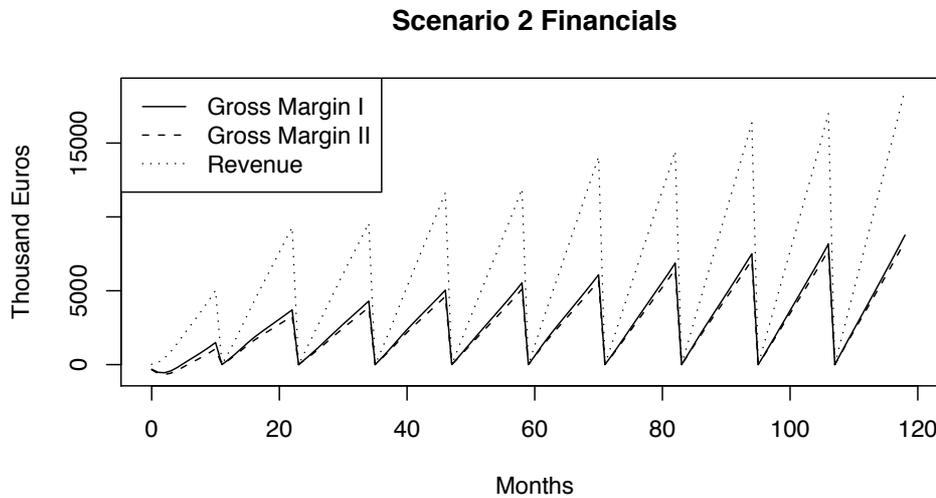


Figure 18: Scenario 2 Financial Performance

The growth is also reflected in the Maister KPI's: Utilisation is still good but now slightly under 80% due to the fact principals do not earn fees themselves. Due to the growth in consultants the leverage also increases because the number of principals remains fixed. The leverage is still only at most 50% of maximum, showing the company still has too many principals. The health factors project leverage and consulting fee still have not been addressed by the new policies and they therefore both remain at 0%.

2.3.3 Scenario 3—Innovate and Standardise

In this scenario management decides to add new policies concerning the health factors project leverage and consulting fees, ensure that principals now also spend time on creating marketing materials and standardising products. Little experience exists in the field of product development and standardisation, so time is allocated according to the relative efforts required by innovation, marketing and standardisation—innovation time is set to 9%, marketing time is set to 30% and standardisation time is set to 61%.

Overall time allocation behaviour is similar to that of scenario 2—due to increased project leverage the projects are delivered more rapidly, which means more proposals need to be written overall, increasing the proposal writing time. The time allocation behaviour is displayed in Figure 20

The resulting financial performance is displayed in Figure 21: Due to increased average fees the revenue quickly jumps to a much higher level, but shrinks in year 3 and 4.

This is due to the fact that the time available for product development quickly dwindles due to the increased time principals must spend writing proposals. So after an initial

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Scenario 2 Maister KPIs

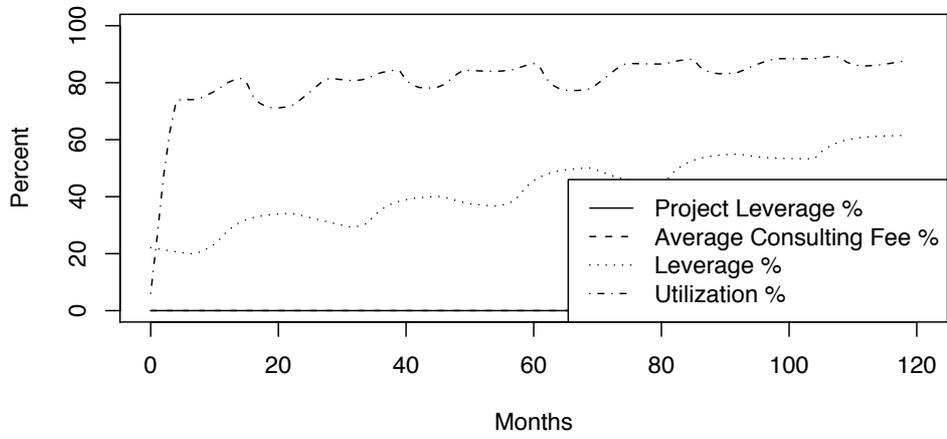


Figure 19: Scenario 2 Maister KPIs

Scenario 3 Time Allocation

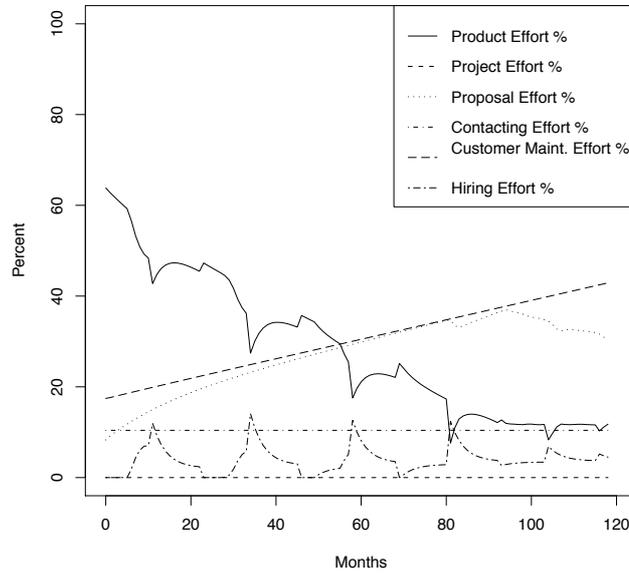


Figure 20: Scenario 3 Time Allocation

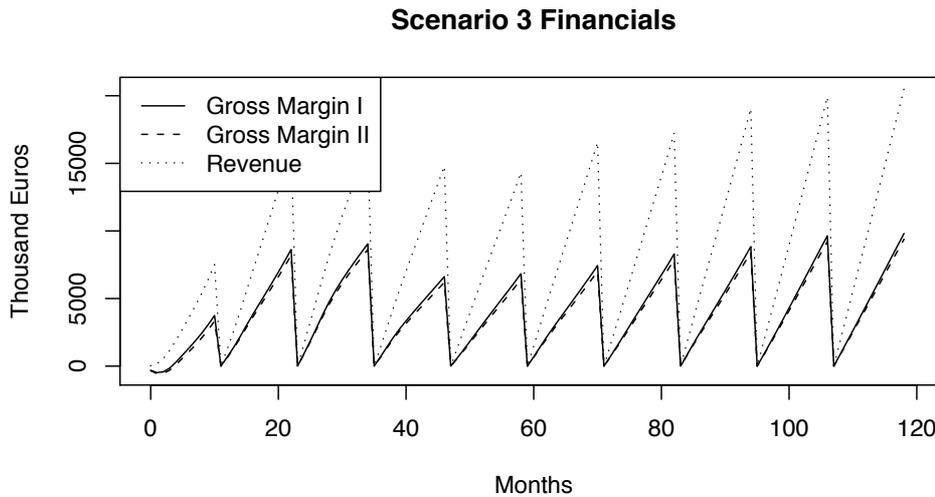


Figure 21: Scenario 3 Financial Performance

period of successful product development both the average fees and the project leverage rapidly decline again, as displayed in Figure 22.

3 Conclusions

The prominent role the principal consultants play within the firm's business model is made clear by the model elaborated in the previous sections: The principals are key to all of the business transactions relevant to value creation, and the way they allocate their time to these transactions is critical to ongoing success.

The simulation scenarios demonstrate the impact the time allocation policies have on the key performance indicators (Maister KPIs): The firm could generate even better results (especially higher leverage and fees) by simply changing the way their principal consultants allocate their time, without having to improve the underlying sales success parameters:

- The firm's current focus on high utilisation of principal consultants may seem attractive in the short term, but it keeps the firm from growing in the long term: A lot could be gained by refocusing effort from project delivery to project acquisition and contact maintenance.
- It is important that principals spent time on service innovation, but currently they concentrate too much on innovation and too little on the marketability (which brings higher fees) and standardisation (which brings higher project leverage).
- While the service development model reflects the firm's practice and is also grounded

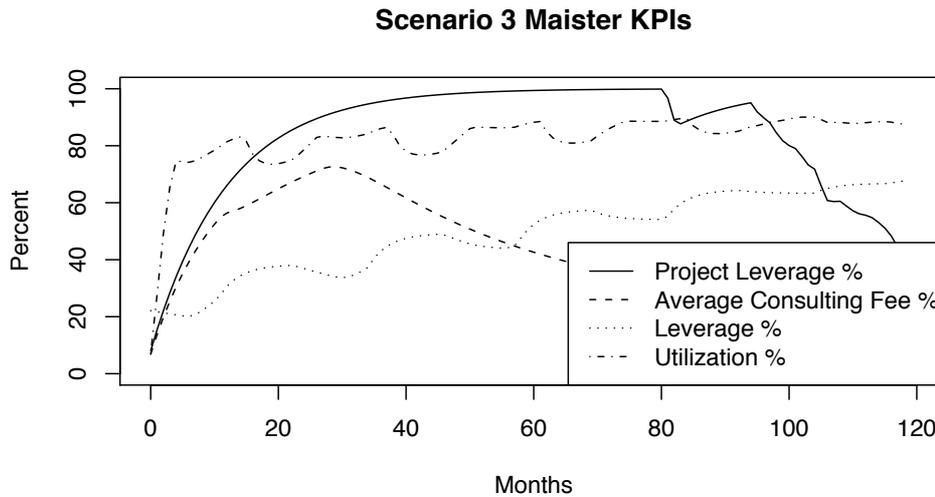


Figure 22: Scenario 3 Maister KPIs

in literature, the positive effect service development may have on both average fees and on project leverage is not—the firm should therefore set up a measurement program to track both the time principals spend on product development and also monitor the effect this may have on fees and leverage.

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