The Business of Engineering

Michael W. Matthews, P.E.
The Business of Engineering

- Competitive Position
- Business Metrics
- Marketing
- Culture
Competitive Position

Competitive Advantage
- Cost
- Differentiation
- Focus
Competitive Position

Cost
- Bid for services
- Developer market
- Commodity work
Competitive Position

Differentiation
- Service
- Size
- Geography
- Expertise
Competitive Position

Focus

Markets
  • K-12
  • Military
  • University
Competitive Position

Focus

 Markets
  • K-12
  • Military
  • University

 Client
  • Developers
  • State University
  • Federal
Focus
- Markets
  - K-12
  - Military
  - University
- Client
  - Developers
  - State University
  - Federal

Competitive Position

Building/Project type
- Laboratory
- Auditorium
- Wastewater
## Competitive Position

<table>
<thead>
<tr>
<th>Focus</th>
<th>Building/Project type</th>
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- **Focus**
  - Markets
    - K-12
    - Military
    - University
  - Client
    - Developers
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    - Federal

- **Building/Project type**
  - Laboratory
  - Auditorium
  - Wastewater
Metrics – How are we doing?

What does it mean?

➢ Trending
  • Year to year
  • Patterns - seasonal

➢ Benchmarking
  • PSMJ
  • Zweig-White
  • ACEC
  • Informally
## Metrics – How are we doing?

### Financial Metrics

- **Profit margin**
  \[ \equiv \frac{\text{Profit}}{\text{Revenue}} \]

- **Revenue growth**
  \[ \equiv \frac{(\text{Rev}_2 - \text{Rev}_1)}{\text{Rev}_1} \]

- **Overhead rate**
  \[ \equiv \frac{\text{Indirect Costs}}{\text{Direct Salaries}} \]

- **Age of receivables**
  \[ \equiv \frac{\text{Owed}}{\text{Revenue} \times 365} \]

- **Work in progress**
  \[ \equiv \frac{\text{Spent, not billed}}{\text{Revenue} \times 365 \text{ (days)}} \]

- **Backlog**
  \[ \equiv \frac{\text{Work remaining}}{\text{Revenue} \times 365} \]
Metrics – How are we doing?

Financial / Productivity Metrics

- Revenue / tech staff \( \equiv \frac{\text{Revenue}}{\# \text{tech staff}} \)
- Revenue / total staff \( \equiv \frac{\text{Revenue}}{\# \text{staff}} \)
- Direct labor multiplier \( \equiv \frac{\text{Revenue}}{\text{Direct Labor}} \)
<table>
<thead>
<tr>
<th>Labor Metrics</th>
<th>Formula</th>
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<tr>
<td>Chargeability</td>
<td>≡ Hours charged / Hours worked or Hours charged / Hours paid</td>
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<tr>
<td>Overtime</td>
<td>≡ Avg Hours per Employee or Hours / Hours worked</td>
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<tr>
<td>Turnover rate</td>
<td>≡ Employees lost / Avg Total Empl.</td>
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<tr>
<td>Staff ratio</td>
<td>≡ # Tech Staff / # OH Staff</td>
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Metrics – How are we doing?

Forward Looking Metrics

- Sales – booked work
  - Compared to last year
  - Compared to goals
  - Compared to revenue

- Backlog – work remaining
  - Growth trend
  - Compared to last year

- Utilization, Overtime
  - Trend
Metrics – How are we doing?

Forward Looking Metrics - Revenue Projections

- Active work
  - Fee remaining
  - Time remaining
- ID/IQ work (open end contracts)
  - Projections from past experience/expectations
- Prospective work
  - Fee
  - Handicap
  - Schedule
Marketing vs. Business Development

➢ Marketing
  • Client needs
  • Competitive landscape – industry, competition
  • Competitive positioning
  • Presentation
  • Brand

➢ Business Development
  • Sales
Brand
A. Who you are
B. Who others think you are
C. Who you think you are
Brand
A. Who you are
B. Who others think you are
C. Who you think you are
Business Development

- Qualifications Based Selection (QBS)
- Selling yourself
- Don’t make a sales pitch
- Ask questions
  - Self-promotion will follow naturally
- Know who you are and what you do
  - Vestibule speech
- Know your clients business as well as he does
What makes up your firm’s Culture?
- Business Drivers
- Focus
- Communications
- Empowerment
- Process
- Feel
Business Drivers
- Revenue
- Profit
- Growth
- Job Satisfaction
- Reputation
- Ego
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## Culture

### Focus

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Communications and Transparency

- Two-way communications
- Open book
  - Project
  - Financials
- Access to the top
Empowerment vs. Dictatorial

- Who makes decisions?
- Who stamps drawings?
- Who deals with the client?
Process

- No process, procedures, standards or controls
- Very Regimented
- Somewhere in between
Culture

Feel

- Family oriented
- Team approach or Us vs. Them
  - Workers vs. managers
  - Architects vs. engineers
  - Electrical vs. mechanical
- Recognition, appreciation
- Type of work, clients
Questions/Comments