Title: Curriculum Innovation: Technical Sales

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Abstract

An excellent career choice for Engineering, Engineering Technology (ET) and Industrial Technology (IT) graduates is the technical sales profession. Given the technical curriculum combined with opportunities to complete business/management coursework, graduates have a solid foundation that has proven to be quite successful in the sales of products and services. The addition of sales training and credentials during their baccalaureate experience further increases the graduate's success in a sales career. This paper will discuss a unique curriculum innovation for engineering and IT students to earn a Technical Sales Certificate during their undergraduate course of study.

Introduction

Each year, an increasing number of graduates from engineering and IT programs enter the field of technical sales: "In many high-tech sectors—medical devices, computer hardware and software, and manufacturing equipment and controls, for instance—more and more engineers and other specialists are being called out of their cubicles and into sales meetings with customers" [1]. Between August 2006 and 2007, the term "sales engineer" had a growth of 17 percent in job postings on CareerBuilder.com [2]. These professionals hold positions as sales engineers, applications engineers, technical sales representatives, and account managers. They determine how products and services could be designed or modified to suit customers needs, and they may also advise customers how to best use the products and services provided. They typically focus on client's problems and show how their product or service will solve the client's problems. They are also commonly involved after the sale in areas such as installation and training, as well as serving as the liaison between the client and their company. Many technical sales professionals provide turnkey solutions to their client's needs. This requires a broad understanding of the complete "system" and may involve many products from various sources [3].

Technical Sales Training

There are currently 27 universities in the United States offering sales programs; 11 have academic centers focusing on sales training that are recognized by the University Sales Center Alliance. Nine of these offer sales certificates upon completion of a particular set of criteria [4]. At this time, only one university, Ohio University, offers a certificate directed specifically at technical sales. The centers are typically located in a College of Business and tied to a Marketing Department, providing specific emphasis on professional sales training.

The Sales Centre at Ohio University

The Sales Centre at Ohio University was formally established by the Ohio University Board of Trustees as an Academic Center in 1997. In October 2005, the Board approved the addition of the Technical Sales Certificate in partnership with the Russ College of Engineering and Technology. This is now one of six certificate programs offered through the Centre. Other certificates include: Professional, Retail, Media, Financial Services, and Sports Management. A key focus of the Technical Sales Certificate is to prepare candidates to meet the needs of manufacturing firms and industrial suppliers who sell materials, equipment, ingredients, and services business-to-business (B2B) [5]. The first Technical Sales Candidate will graduate in spring 2008.

Technical Sales Certification

The Technical Sales Certificate requires 20 credit hours (quarter hours) outside of the major in specific coursework. This includes three advanced marketing courses, one advanced communications course, and a 300-hour internship in technical sales. The descriptions for the courses are seen below [6]:

MKT 358 – Professional Selling Techniques – This course combines personal selling theory with actual practice. Students learn skills needed for successful careers in sales and marketing.

MKT 425 – Business-to-Business Marketing – This course introduces the field of B2B marketing. The course answers the questions: What is business marketing? In what markets does it occur? Topics include: organizational buyer behavior, methods of assessing business market opportunities, and business marketing strategies.

MKT 458 – Sales Management – Principles and practices in planning, organizing, and controlling the sales force. Selection, training, compensation, supervising, and stimulating salespeople. Analysis of sales potentials and costs.

MKT 498 – Internship – 300-hour internship in sales applicable to the student's certificate area.

Select one of the following:

COMS 206- Communication in Interpersonal Relationship – Provides maximum experience in communication in social interaction. Exploration of communication variables and skill development of message generation in one-to-one informal settings.

or

COMS 310 – Information Diffusion – This course provides an understanding of information diffusion theory, which seeks to explain the process through which new ideas (innovations) spread over time via communication channels among the members of a social system.

In addition to the coursework, students are expected to participate in other various learning activities, including Signature Learning Events such as Professional Development Day [7].

Although the Department of Industrial Technology identified the need for this certificate program, it is available to all majors in the Russ College of Engineering and Technology, including Civil Engineering, Chemical and Biomolecular Engineering, Industrial and Systems Engineering, Industrial Technology, Mechanical Engineering, Electrical Engineering, Computer Science, and Aviation. Acceptance into the Technical Sales Certificate program is competitive and has limited enrollment. Numerous criteria are assessed, including GPA, sales experience, communication, and interview skills [8].

Opportunities for Sales Training

Of the 27 universities identified by HR Chally (June 2007) as offering sales programs, 19 also offer accredited programs in engineering, engineering technology (ET), or industrial technology (IT) [9, 10]. These universities are listed in Table 1, along with their accredited degree designations.

Table 1: Schools Offering Sales Training with Engineering, ET, or IT Programs

School	ABET Engineering	ABET ET	NAIT IT
Ball State		X	X
Baylor	X		
Bradley	X	X	
Georgia Southern		X	X
Illinois State			X
Indiana University	X	X	
College of New Jersey	X		
Northern Illinois	X	X	X
Ohio University	X		X
San Diego State	X		
Univ. of Akron	X	X	
Univ. of Conn.	X		
Univ. of Dayton	X	X	
Univ. Houston	X	X	
Univ. of Louisville	X		
Univ. of Toledo	X	X	
Univ. of Wash - Seattle	X		

Western KY Univ.	X		X
Western Mich. Univ.	X	X	

There are a total of 16 schools with ABET accredited engineering programs, 10 with ABET accredited ET programs, and 6 with NAIT accredited IT programs. There may be opportunities for these engineering, ET, and IT programs and their students to participate in the sales programs at their universities to further develop the area of technical sales.

Alumni Survey

The Technical Sales Certificate provides a new opportunity for students that are interested in sales to better prepare themselves for this career. The Department of Industrial Technology was eager to gain input from alumni currently holding positions in technical sales to better understand how to improve the curriculum to meet the needs of current and future students that may choose sales as a career. The following are results from an e-mail survey to IT graduates that are currently in the technical sales profession. A total of 23 alumni responded. None of these alumni participated in the new Technical Sales Certificate program, but all responded that training in sales would have been helpful for their careers. The order of the responses to each question was randomly sorted for anonymity. A summary of findings is included, following the survey results. "(X2)" indicates that there were two identical responses. "(__ Corp)" indicates the location of the corporate office. The results of this survey are being used to evaluate the current IT curriculum and provide input to the sales training program to better meet the needs of technical sales professionals in the future.

Survey Results

Your Company Name & Location?

Antibus Scales & Systems Inc., South Bend, IN (Fort Wayne, IN, Corp)
Bayer Material Science, LLC, Pittsburgh, PA
Captive Aire Systems, Inc., Denver, CO (Raleigh, NC, Corp)
Captive Aire Systems, Inc., Columbus, OH (Raleigh, NC, Corp)
Flowserve Corp., Ashland, KY (Irving, TX, Corp)
HAAS Factory Outlet, Tampa, FL
Honda Lock Inc, Marysville, OH
Lincoln Electric Co., Buffalo, NY (Cleveland, OH, Corp)
Wittmann Inc., Maumee, OH (Torrington, CT, Corp) (X2)
Superior Equipment Solutions, Springboro, OH (X2)
Owens Corning, Toledo, OH
Parker Hannifin Corp., Pittsburgh, PA (Cleveland, OH, Corp)
Parker Hannifin Corp., Cleveland, OH (X2)
Parker Hannifin Corp., Jacksonville, AL (Cleveland, OH, Corp)
Parker Hannifin Corp., Marysville, OH (Cleveland, OH, Corp)
CVG Global Truck – Commercial Vehicle Group, Dublin, OH
Staffco, Cleveland, OH

JH Bennett & Co., Inc, Novi, MI
Square D Company, Schneider Electric Company, Columbus, OH
Wisco Piston, Inc., Mentor, OH

Your Job Title?

Analytical Marketing Manager
Applications Engineer (2)
Branch Sales Manager
Director, Sales and Distribution
Lead Sales Engineer
National Sales Manager
President/Owner
Product Manager
Regional Sales Manager (X2)
Sales Executive
Sales Engineer (X3)
Sales Manager
Senior Sales Engineer
Technical Sales
Technical Sales Representative
Territory Manager (X3)
Vice President, Sales

Describe the product or service you have been responsible for selling.

Centrifugal pumps and mechanical seals
CNC machine tools (sales and service) (X3)
Commercial kitchen ventilation and fire systems (X2)
Electrical distribution equipment to contractors -120V to 38KV
Fluid handling systems
Fluid power components (pneumatic, hydraulic, vacuum, etc.)
Fuel, air, oil, and coolant filtration systems
Hydraulic components (X2)
Hydrostatic transmissions and variable piston pumps
Industrial scales for industry, aggregate, agriculture, and business
Insulation for commercial and industrial use
Key cylinder sets and door hardware (mirrors, handles, latches, etc.)
Manufacturing components (electronics, electro-mechanical devices, LCD screens, plastics sheet and resin, wire and cable, etc.)
Manufacturing services (metal stamping, plastics molding, composites processing, etc.)
Plastics injection molding equipment, including support equipment
Precision aluminum forgings for the motorsports industry
Raw materials for the paint and coatings industry
Robotics and automation

Welding products

Are you selling a product or service built by your company, or are you a manufacturer's representative?

Products manufactured by my company (X13)
Products and services produced by my company (X2)
Manufacturers' representative/distributor (X7)

Approximately what percentage of your job involves direct sales?

Range: 3–100%
Average: 60%

What percentage of your job involves inside sales and outside sales?

Inside Sales – Range: 0–100%, Average: 25%
Outside Sales – Range: 0–100%, Average: 65%
(Note: nine respondents indicated 100 percent outside sales)

When in your career did you begin having sales responsibilities? (following graduation)

Immediately (first job) – (X10)
Three months after graduation
Six months (X3)
Eight months
One year after graduation
Two years after graduation (X2)
Four years (X2)
Five years
13 years

What type and length of sales training was provided within the company?

On the job – no specific training period (X2)
Two weeks product focus and ongoing (X4)
Three to four weeks
Six weeks
10 weeks
Several months shadowing (X3)
Three months
Five months
Six months
Nine months
18 months
One year technical and sales training (X2)

Two years technical on product
Two-year rotation through marketing, accounting, customer service, product, and technical training

What type and length of sales training was provided outside of the company?

One-day Dale Carnegie Cold Call/New Customer Class
Three, one-week courses on value
10-week Dale Carnegie Sales Class (X2)
Several American Machine Tools Distributors Association (AMTDA) technical courses
Ongoing with manufacturers of the products we represent.
Numerous short courses (1–3 days)
No outside training (X16)

How many total years of experience do you have in the area of sales?

Range: 2–33 years, Average: 8 years

Which of the following have you been responsible for during your sales career? (Check all that apply) (23 possible responses)

_18_ Identifying potential customers (lead generation)
_19_ Making the initial contacts with customers
_21_ Making technical presentations or demonstrations about your product or service
_21_ Working with the customer to determine their need for your product or service
_19_ Working with customers after the sale to apply or implement your product or service

What skills and attributes did you acquire while pursuing your BS in IT that have helped you succeed in sales? (Please add other skills below.)
0 = no help in my success, 1 = somewhat helpful, 2 = important, 3 = very important, 4 = critical

Technical Skills

Computer and systems applications	Range: 1–4, Average: 3.0
Manufacturing processes	Range: 2–4, Average: 3.3
Manufacturing materials	Range: 1–4, Average: 2.8
Quality assurance (philosophy, statistics, continuous improvements, etc.)	Range: 1–4, Average: 2.5
Product and process design and documentation	Range: 2–4, Average: 2.8
Power and controls (electronics, power transmission, hydraulics)	Range: 0–4, Average: 3.0
Hands-on application	Range: 3–4, Average: 3.8

Communication Skills

Written	Range: 2–4, Average: 3.6
Oral (public speaking, formal presentations, etc.)	Range: 3–4, Average: 3.3
Graphical (sketching, CAD, etc.)	Range: 1–4, Average: 2.5

Other Skills and Attributes

Problem solving (application of math, science, and technology principles)	Range: 3–4, Average: 3.4
Work ethic	Range: 3–4, Average: 3.9
Personal integrity	Range: 2–4, Average: 3.8
Global perspective	Range: 1–4, Average: 2.8

How important has the minor in business been to your sales career?	Range: 2–4, Average: 3.2

Others – please add to the above list

- Understanding of the organization –people interface and product design through distribution
- Project management
- Time management
- Multi-tasking
- Questioning skills

What could be added to our BS in IT curriculum (IT courses or others) that would help future technical sales professionals succeed?

- Increased public speaking (using PowerPoint)
- Engineering economics
- Increased emphasis on business skills including pricing, margins, ROI, contracts, etc.
- Logistics
- Require project management
- Cost accounting
- Market-driven management
- Making effective, professional technical presentations
- Industrial distribution and logistics
- Increased perspective on globalization
- How to sell class, such as Sales 101 (X3)
- Co-op in sales organizations
- A product-based marketing class, rather than service-focused
- Add selling to the capstone project
- Negotiations (X2)
- IT was perfect

Summary of Survey Findings

IT graduates hold positions in technical sales in a variety of organizations with responsibilities for selling manufactured products and services, as well as representing others' products to meet client needs. Of the 22 respondents, 17 different job titles were included, indicating the breadth of the technical sales profession.

Approximately 60 percent of the respondents were involved with direct sales to the end-user, with 65 percent of their time involved with outside sales. This means that approximately 65 percent of the time the sales professional is at the client's location. This time also includes consulting on client needs, managing the installation, and training the client on the product or service. Nine respondents indicated that they spend 100 percent of their time in outside sales. Ten of the 22 respondents started their career in sales immediately after graduation, and several moved into sales positions following positions in design, manufacturing, and engineering.

Training was surprisingly short; however, the IT graduate brings to the job a solid technical and business background. Most of the training was done in-house rather than using outside sources. (Sixteen respondents had no outside training.)

Five responsibilities were identified to include in the survey with input from several technical sales professionals. The results indicated that all were part of at least 18 individuals' experiences.

Several skills and attributes were identified from the IT curriculum, and alumni were asked to indicate how helpful these were to their success in the sales profession. Within the Technical Skills section, hands-on application was the most important followed by manufacturing processes.

Within the Communication Skills section, both written and oral communication skills were very important. Although Graphical Skills (sketching, CAD, etc.) are a significant emphasis in the curriculum, they were not rated as very important to the sales professional.

Within the Other Skills and Attributes section, there were three items that rated highly. Work ethic and personal integrity were identified as critical attributes, followed by problem-solving skills.

The results of this survey are being used to evaluate the current IT curriculum and provide input to the Sales Training Certificate program to better meet the needs of technical sales professionals in the future.

Conclusion

Careers in technical sales are an excellent fit for engineering, ET, and IT graduates. These graduates have the necessary foundation in technology to be successful in this area. The additional formal training in business and sales leading to a Technical Sales Certificate

discussed in this paper provides an additional advantage to the student in both gaining employment in sales and succeeding in this competitive career. The author of this paper would encourage all engineering, ET, and IT program directors to identify their alumni that are currently employed in technical sales and seek their input as to how to better prepare future sales professionals for successful careers. It is also suggested that these programs work closely with the business schools at their university to collaborate on developing or improving sales training.

References

[1] Kinni, T.B. (March 2008). Engineers Who Sell. Selling Power Magazine, 62.
[2] Kinni, T.B. (March 2008). Engineers Who Sell. Selling Power Magazine, 60–63.
[3] U.S. Department of Labor, Bureau of Labor Statistics. (2006–2007). Occupational Outlook Handbook 2006–2007 Edition: Sales Engineer. Retrieved June 2007, http://www.bls.gov.
[4] HR Chally. (June 2007). Chally-Verified University Sales Programs. Top University Sales Education Programs. A Special Supplement to Selling Power Magazine, 10–13.
[5] Hartung, K.L. (2005). Proposal for the Sales Centre Specializing in Technical Sales. Presented to the University Curriculum Council.
[6] Ohio University Undergraduate Catalog 2006–2008. (2006) 246–247, 299–300.
[7] Hartung, K.L. & Frawley, J. (June 2007). Student Participation Drives Engagement, Ownership, and Empowerment. Top University Sales Education Programs. A Special Supplement to Selling Power Magazine, 8–9.
[8] The Sales Centre. Sales Centre Certificate Programs. Retrieved June 2007, http://www.thesalescentre.com.
[9] ABET Accredited Programs. Retrieved February 2008, http://www.abet.org/accredited_programs.shtml.
[10] National Association of Industrial Technology. (2007). 2007 NAIT Technology Program Directory.

Biography

Dr. Klein is an Associate Professor and Chair of the Department of Industrial Technology in the Russ College of Engineering and Technology at the Ohio University in Athens, Ohio. He teaches courses in manufacturing operations and industrial plastics. He is also the Associate Director of the Schey Sales Centre with emphasis on technical sales for engineering and technology majors. Following extensive experience in industry, Dr. Klein joined the faculty in 1990. He is a member of ASEE, NAIT, the Association of Rotational Molders, and the Society of Plastics Engineers.