TRADE SECRETS PROTECTION: THE MISSING INGREDIENT IN POM EDUCATION

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The theft and misappropriation of trade secrets is emerging as a vital management concern. Production and operations management (POM) textbooks appear to provide no coverage of the issue. This article reviews the development of trade secrets legislation, current trade secrets laws, and discusses the current situation surrounding the lack of adequate recognition of trade secrets protection in typical POM texts. A content analysis of 29 textbooks used in production management courses indicates that POM education is lacking in its treatment regarding the recognition of trade secrets risks and a corresponding need for production managers to provide for the adequate protection of POM secrets to which they are entrusted.

A rapidly emerging issue in modern business concerns the risk of secrets theft and the necessity for providing adequate protection for proprietary information referred to as trade secrets. A trade secret is valuable information that is not generally known or

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legally knowable by others and from which its owner derives an economic benefit. In the production and operations management (POM) environment, trade secrets usually take the form of valuable information about a product, service, or process that is viewed as a proprietary property of the owner. Its possession or use gives a competitive advantage to its owner. Existing and proposed legislation offer firms protection and remedy for misappropriation, and a limited but growing literature in the area provides management with recommendations and guidelines aimed at securing protection for trade secrets (Arnott, 1994; Budden, 1996; Budden, Lake & Lett, 1990; Maxwell, 1989).

Trade secrets misappropriation is on the rise (Brian, 1994). The number of cases filed under the auspices of the Uniform Trade Secrets Act and other state laws has been increasing in recent years with the realization that trade secrets are at risk and that there is a civil litigation avenue open to firms which provides for the protection of such secrets. In addition, it is likely that criminal cases alleging trade secrets theft will begin appearing, since in 1996 a federal law was enacted which makes some instances of trade secrets theft a federal criminal offense. Trade secrets theft is not just a problem facing domestic firms, as reports that Japanese firms have been similarly victimized demonstrate (Doe, 1988). The direct costs of trade secrets misappropriation has been estimated in the billions of dollars annually (Budden, 1996; p. 73). Examples of such costly thefts in the production environment are easy to find, but two of the more publicized incidents involved the theft of General Electric's formula for making high-grade industrial diamonds, worth millions of dollars, and the theft of the formula for "Slick 50" which was reportedly used in an extortion attempt (Ingrassia, 1990; Reifenberg, 1995). More recently, Volkswagen's settlement of a trade secrets dispute with General Motors resulted in a settlement valued in excess of one billion dollars(*U.S. News & World Report*, 1997). The problem's global nature is underscored by the fact that some federal officials believe that the country's biggest security challenges are arising from foreign entities intent on stealing U.S. business secrets, rather than military secrets (Jones, 1992; *Datamation*, 1993). Indeed, Carley (1995) describes how agents of the French government infiltrated IBM and Texas Instruments allegedly for the purpose of passing secrets back to the French government for potential use by French computer firms.

Further exacerbating the problem of maintaining trade secrets is the fact that the U.S. Freedom of Information Act (FOIA) mandates that some information in the possession of federal agencies is to be made available to requesting parties (U.S. Government Printing Office, 1994). While the federal law exempts information delineated as trade secrets from disclosure, the failure to understand trade secrets law has resulted in the disclosure of secrets through such requests and by accident (Guida, 1989). Indeed, the majority of requests for information under the FOIA are from businesses seeking information on competitors. For instance, Guida (1989) reports that over 80% of the requests for information from the Food and Drug Administration filed pursuant to the FOIA are from businesses.

Though trade literature and academic literature from a variety of fields such as accounting address the issue (see for instance; Lake, Budden & Lett, 1991), POM textbooks do not appear to give coverage to the issue. Production managers need to recognize their responsibility to protect their firms' trade secrets and act accordingly. While some POM students may be exposed to trade secrets law in a business law course, the strategic importance of secrets in many POM environments emphasizes the need for a reinforcement of trade secrets strategies in POM courses. Reinforcing the necessity to safeguard one's secrets and the impact of trade secrets laws could be integrated into POM models. The potential for a competitively damaging disclosure in the POM environment exists. Production managers need to be familiar with the issue of trade secrets and with the impact of trade secrets laws, especially the Uniform Trade Secrets Act, on their efforts.

BACKGROUND OF TRADE SECRETS LEGISLATION

For years, federal laws have offered protection for specific types of intellectual properties. Laws covering patents, trademarks and copyrights are well known for the protection they offer owners for intellectual properties and/or identifying information. Such federal statutes encourage innovation through the protection of exclusivity offered under their auspices. However, these federal statutes that offer protection for intellectual properties have weaknesses or limitations which make them less than ideal for providing adequate protection of trade secrets (Lake, Budden & Lett, 1991).

For example, patenting an invention or process requires the applicant to disclose critical information in the application. This disclosure results in making the information available to others, including potential competitors. A patent owner can expect that the patented product or process will be an exclusive property of the owner for twenty years. In the event that a federal court voids the patent due to errors in the process or as an anti-monopolistic measure, a firm's proprietary rights and its competitive advantage are lost. Similarly, the divulgence of the secret during the patent process aids unscrupulous individuals intent on stealing. If these individuals are foreign nationals, they may be beyond the reach of U.S. law and relevant trade treaties. Once the secret is revealed, the potential for misappropriation and competitive injury increases. What was once a secret giving a firm a competitive advantage in the market place is no longer secret, since the secret was voluntarily revealed through the patent application process. Additionally, information such as descriptions of new products, sourcing information, research results, process procedures, process ingredients, and other types of information production managers encounter are often not eligible for patent protection.

Copyrighting materials also results in the public disclosure of the information contained within the materials. Wisely, a firm would not seek copyright protection of POM process descriptions, because it is the wording of the description that copyright law aims to protect, not

the physical process involved. Copyright law extends protection to the specific wording of documents or works of art, not to ideas described in documents or works of art.

Trademark laws extend legal protection to owners of brands and identifying information. They do not include protection for information considered to be trade secrets. Like patents, the information's disclosure is assured in a trademark application. Indeed, it is the brand which the owner-applicant intends to disclose that needs and is granted protection from outside abuse that is the major benefit of trademark law. Trademark law has little relevance to the protection of secret information.

It is interesting to note that federal law historically provided for the protection of certain types of intellectual properties including copyrightable materials, inventions, and trademarks. The lack of federal protection for trade secrets has been notably lacking, until recently. Small business owners in the U.S. expressed their belief that strengthening intellectual property laws at the federal level should be a priority concern for federal law makers (Selz, 1995). In response to pleas from business groups and others, Congress finally deemed that some instances involving the misappropriation of trade secrets would be construed to be a violation of federal law when it adopted the 1996 Industrial Espionage Act (IEA). The IEA carries criminal penalties and fines for individuals and firms found guilty under its auspices.

Still, in most instances involving allegations of trade secrets misappropriation, state trade secrets laws will be the primary vehicle under which firms will seek legal remedy. Of the various states laws concerning trade secrets, the Uniform Trade Secrets Act (UTSA), a model law recommended to state legislatures for adoption by the National Conference of Commissioners on Uniform State Laws, is the most likely law under which remedy will be sought. In every state, trade secrets acts and contractual laws have historically offered firms protection for their trade secrets. A major weakness that exists with these state acts involves the fact that their provisions and scope vary greatly, resulting in confusion for trade secrets owners and inconsistent protection for their property rights. In an effort to correct this legal shortcoming, the National Conference of Commissioners on Uniform State Laws, an independent commission composed of legal analysts, proposed a model law to the states that offers consistent definition and treatment for trade secrets protection. The UTSA offers the possibility of more uniform legal protection to owners of proprietary trade secrets. It was originally recommended to the states by the National Conference of Commissioners on Uniform State Laws in 1979 and amended in 1985. As of the date of writing this article, a total of 40 states and the District of Columbia have enacted laws based on the Act (Uniform Laws Annotated, 1996). Other states are considering the Act for possible adoption. Table 1 lists those jurisdictions which have adopted laws based on the UTSA, while Table 2 lists those states which have not yet adopted an act based on the UTSA.

The UTSA defines trades secrets, offers legal protection to owners of trade secrets, and offers legal remedies should owners find themselves victims of secrets theft or misappropriation.

The Act's adoption by the 41 jurisdictions to-date, and subsequent court cases (see for instance *Electro-Craft Corporation v. Controlled Motion, Inc.*, 1983) carry implications for production managers that need to be recognized. Production managers should recognize they often encounter or are in possession of trade secrets information, and as a result, they need to take adequate steps to protect their firm's proprietary property rights.

Table 1

Jurisdictions That Have Adopted Versions of The Uniform Trade Secrets Act

Alabama	Iowa	Ohio
Alaska	Kansas	Oklahoma
Arizona	Kentucky	Oregon
Arkansas	Louisiana	Rhode Island
California	Maine	South Carolina
Colorado	Maryland	South Dakota
Connecticut	Minnesota	Utah
Delaware	Mississippi	Virginia
District of Columbia	Missouri	Washington
Florida	Montana	West Virginia
Georgia	Nebraska	Winsconsin
Hawaii	Nevada	
Idaho	New Hampshire	
Illinois	New Mexico	
Indiana	North Dakota	

SOURCE: Uniform Laws Annotated, Volume 14, Civil, Procedural and Remedial Laws, 1996 Cumulative Annual Packet Part, St. Paul Minnesota, West Publishing Co.

The reason that the majority of firms will rely on the UTSA (or other state laws) for remedy is that (1) the IEA requires the minimum value of the secret involved to be $100,000; (2) a criminal prosecution requires a higher burden of proof than civil prosecution; (3) many cases involving trade secrets misappropriation do not involve interstate commerce (and are therefore not within the jurisdiction of the IEA) but rather are intrastate complaints; (4) the fines levied, if any, are payable to the federal government; a civil suit would still be necessary to obtain damages; and (5) the case would have to be deemed serious enough or of such an egregious nature as to warrant federal intervention. It is important to realize that it is the purpose of both federal and state statutes that trade secrets be recognized by law and protection extended to their owners. While the presence of the federal statute will undoubtedly serve as a deterrent to misappropriation, an understanding of the UTSA and its implications for production and operations management strategy is important if trade secrets are to be recognized and adequately protected.

Table 2

Jurisdictions That Have Not Adopted Versions of The Uniform Trade Secrets Act

Massachusetts
Michigan
New Hampshire
New Jersey
New York
Pennsylvania
Tennessee
Texas
Vermont
Wyoming

RELEVANCE OF TRADE SECRETS TO POM EDUCATION

Production managers are exposed to trade secrets on a regular basis. Research results are often valuable information that can be construed to be a trade secret. Proprietary production processes, proprietary packaging procedures, new product information, supplier information, costs and pricing information, internally developed software, and other proprietary information to which production managers are exposed can be construed to be secret information of value that gives a firm a competitive advantage in the market place. The source of such a competitive advantage must be recognized and appropriate steps taken to protect the secrets involved.

In general, proprietary production information can often be considered a trade secret deserving of protection. The UTSA and other state trade secrets acts offer protection for trade secrets if a firm has taken appropriate and reasonable steps to protect its secrets (Lake, Budden & Lett, 1991). The theft of trade secrets is on the rise, and according to one estimate increased 260% between 1985 and 1991 (Brian, 1994). Indeed, some insurance firms have expanded their kidnaping and ransom coverage to include risks associated with the theft of trade secrets (Roush, 1994). Production managers need to be aware of such risks and be prepared to act accordingly. POM textbooks should identify such risks and provide a general guide for production management efforts aimed at protecting trade secrets in the production environment.

It appears that professionals outside of the production environment are recognizing the need to identify and provide for the protection of trade secrets information. Articles in publications targeted to a variety of non-POM professionals, such as dentists, management accountants, internal auditors, sales managers, and financial managers, have appeared in recent years espousing the need to protect trade secrets (see for instance, Arnott, 1994; Budden, 1989; Budden, Lake & Lett, 1990; Carley, 1994; Ingrassia, 1990; Jones, 1992). Budden, Lake and Yeargain (1995) outlined a seven-step plan aimed at protecting trade secrets which advised managers to recognize that they may be in possession of valuable secrets, that a climate of confidentiality needs to surround such secrets, and that reasonable steps to protect the secrets need to be taken, enforced and monitored. The paucity of trade secrets coverage in an engineering context is emphasized by the appearance of an article in an engineering journal concerning the necessity to protect trade secrets which was, in fact, a reprint of an article which had first appeared in an accounting journal (see Budden, Lake & Lett, 1991). POM professionals need to be aware of the risk they face and the necessity of providing adequate protection for the trade secrets to which they are entrusted.

EMERGING IMPORTANCE OF TRADE SECRETS PROTECTION

An interesting aspect of value relative to trade secrets involves the concept of a secret which possesses a negative value. The Commissioners (1985), in their comments to the UTSA, proffer that information of a negative value may be construed to be a trade secret capable of garnering protection under the UTSA. Information with a negative value would include, for example, knowledge that a particular process or effort would not be profitable or would be counter-productive if implemented in the production environment. An investment that results in a discovery that a particular process would not be financially feasible is information of value, negative value perhaps, but valuable, and potentially a beneficiary of trade secrets protection efforts.

It is easy to make an argument for the importance of trade secrets protection in the current, downsizing, less-loyal work environment of the 1990s. Maxwell (1989) estimated that even among high technology firms in the U.S. where much secrecy can be expected, one-third had no specific protection plan to guard against trade secrets theft. Academicians and executives agree that the risk of damage from trade secrets theft is increasing but managers appear to be doing less than is needed to provide for the adequate protection of such secrets (Doe, 1988; Chadbourne, 1987; Lake, Budden & Lett, 1991).

Relevance of the Problem

In business, trade secrets theft is on the rise. Trade publications and news articles have reported on the trade secrets problem in recent years. IBM, Mary Kay, Nationwide Mutual Insurance, J.D. Powers & Associates, General Electric, and Northwest Airlines are among the

larger firms which have initiated action seeking legal protection of their trade secrets and/or remedy for damages related to the misappropriation of those secrets (Byron, 1991; Carley, 1994; Cunningham, 1992; Miller, 1992). Arnott (1994) stresses the need to firms to take specific legal and security actions in order to prevent the misappropriation or theft of trade secrets information in light of the current work environment. Budden (1995) discusses the necessity of destroying old copies of the information and not just throwing secret information in the trash. As Palmeri (1994) mentions, one firm involved in a trade secrets dispute accumulated over 10,000 pages of information from a competitor's trash which allegedly implicated the competitor in a trade secrets theft. Even a cosmetics firm has been accused of having its operatives sift through trash seeking information on its competitor (Zellner, 1991). Production and operations managers need to be alert to the fact that they are in possession of valuable trade secrets and be aware that they must take proactive steps in order to adequately protect those secrets to which they are entrusted. One trend which some recognize as increasing the risk of theft of trade secrets is the trend toward "partnering" in the area of vendor relations (Bleakley, 1995; Budden, Jones & Budden, 1996; Stuart, 1993; Templin & Cole, 1994). Partnering, which results in the use of one vendor over a long period, offers a variety of benefits to both parties (Stuart & Mueller, 1994). In the POM environment, partnering requires the sharing of information which often exposes trade secrets information to the parties involved. This sharing of secret information, necessarily shared in order to maximize the benefits of the partnering arrangement, puts the owner-firm at risk of losing its secrets. Partners in these arrangements often share information about internal operations, productions costs, product development technology, new products, and production processes which are often proprietary secrets of the owner-firm and may be construed to be legally protectable trade secrets. The sharing of such information does have its risks. As Henderson (1990) explains, parties to such a partnership share both risks and benefits from the agreement.

O'Neal (1993) discusses the increased dependence on vendors for innovation that arises from partnering arrangements. Manufacturers such as Boeing, Honeywell, and Bose sometimes pass the innovation tasks to vendors to save R&D costs (Bleakley, 1995). JIT-II programs, which allow vendors to place orders for their customers as stock levels fall, give outside vendors unprecedented access to the production environment and the secrets it holds. Such information sharing arrangements present challenges to firms seeking to assure the continued secrecy of their properties. Thus, firms involved in partnering agreements face increased exposure or a heightened risk for the loss of their trade because a partnering arrangement requires a close sharing of proprietary information. Without the close sharing of proprietary information, partnering arrangements often would not produce the benefits that many desire. In describing supplier partnerships, Stuart and Mueller (1994) recognize that the supplier, in essence, becomes an extension of the purchasing organization's process and a joint partner in a total quality effort. Still, the risk for misappropriation or theft of trade secrets through partnering agreements needs to be recognized and steps implemented to protect the secrets involved.

Computers and Ease of Information Transfer

Another factor which increases the challenge of providing adequate security is the relative ease by which secrets may be stolen when stored in electronic form. The widespread use of telecommunications and networks present easy avenues through which secrets may be physically misappropriated. Stealing data electronically through networks or over telephone lines is much easier and more difficult to detect than carrying physical evidence and often leaves no easy trail to follow. Similarly, miniature disks and tapes capable of storing large volumes of information ease the physical transporting of secret documents by disgruntled employees. The ability to easily transfer, electronically, large amounts of secret information is creating a whole new method through which trade secrets may be misappropriated, creating new headaches for those whose responsibilities include protecting such information. Internet and other such information highways present security and production managers a whole new area of risk concern. It is imperative that production managers recognize the exposure their trade secrets face and take sufficient steps to insure their continued secrecy.

Employee Loyalty

A factor further contributing to the problem of trade secrets misappropriation is the decreased level of employee loyalty which has emerged in recent years due to personnel actions such as "downsizing" and the resulting layoffs of middle management. As Arnott (1994) points out, employees (sales persons) take customers with them when they leave a company, as well as valuable information about the company they are leaving. Henkoff (1990) found that almost three-fourths of senior managers reported decreased levels of morale, trust and productivity after implementation of downsizing efforts. Brown (1994) emphasizes that the old employer-employee contract has been undermined by massive layoffs and can no longer be taken for granted by those in the workplace. Surely, the almost relentless efforts to downsize or reengineer work in organizations is leading to a less loyal employee; an employee more likely to steal information in an effort to get even or to improve his/her chances in a new work environment. It is these employees, especially, who pose a risk to secrets integrity that production managers need to be wary of in their efforts to control secrecy.

Global Environment

Finally, the increased use of international sourcing bolsters the concern for the protection of proprietary secrets. Sourcing is a term used to describe the purchase of desired materials from vendors. If a U.S. firm markets products to foreign firms, or sources internationally, and trade secrets are stolen, legal recourse is more difficult and sometimes impossible to obtain. As Templin and Cole (1994) discuss, the American television market was, in a sense, given away when Asian firms, originally entrusted with the production technology to build picture tubes began to use the information to build entire television sets. The result was that the U.S. television industry almost ceased to exist. Further, the use of foreign governments in industrial espionage has been reported (Jones, 1992).

The potential loss of secret process information is underscored by General Electric's court victory over a Korean firm, after alleging its proprietary process for making synthetic diamonds, worth millions of dollars, was stolen (Ingrassia, 1990). In *Electro-Craft Corporation v. Controlled Motion, Inc.* (1983), the plaintiff lost its bid to recover damages for the misappropriation of its trade secrets when the Minnesota Supreme Court ruled the firm failed to take reasonable efforts to maintain the secrecy of its process. Similarly, in *Rockwell Graphic System, Inc. v. Dev Industries* (1990), Rockwell failed in its attempt to obtain a summary judgement concerning the misappropriation of its trade secrets when the court noted that Rockwell's efforts were not sufficiently protective to establish secrecy.

In *IMI-Tech Corporation v. Gagliani et al.* (1986) the producer of polymide foam was successful in its attempt to enjoin former employees from licensing or using its trade secrets. In this case, an employment agreement which prohibited employees from disclosing confidential information obtained while working for IMI-Tech was found to be valid and enforceable. It should be noted that the specifics of such agreements may cause them to be invalidated if the specifics do not meet the expectations of state law. Such agreements need to be legal as to time and place, meaning that they must not restrain unduly one's right to compete in the economy. Most states have explicit limits that can validate or invalidate such an agreement. For instance, some states allow employment agreements that restrict the employee from competing with the employer for a period not to exceed five years and within a reasonable distance from the employer's location. An agreement that restricts an employee from ever entering the business again would be found to be invalid in such a state and unenforceable. The length of the agreement would have to meet state law.

Another example of the potential costly nature of the trade secrets problem is detailed in a suit filed by Willis Corroon's construction division in which it alleged that a defection of four key executives resulted in the loss of more than 175 clients, 50 key employees, and millions of dollars in current and future income (Roberts, 1994). U.S. Steel experienced a similar management exodus and subsequently filed suit against National Steel and several former managers alleging among other things that their defection was part of an insidious raid designed to cripple U.S. Steel and steal its trade secrets (Baker, 1994). These and dozens of other cases in recent years indicate that POM professionals need to take trade secrets protection seriously.

One would conclude that the issue of trade secrets protection merits consideration in production and operations management education. Students should be exposed to the concept of trade secrets, taught the necessity of adequately protecting their firms' secrets, and taught methods for accomplishing such protection. The effort at such education could be paired with the concept of ethics in the POM environment in order to reinforce the ethical considerations of misappropriation or theft. Regardless of how it is taught, it needs to be taught to POM students. The combined need for coverage of trade secrets issues and ethical behavior appears to be greater today than ever.

POM TEXTBOOK COVERAGE OF TRADE SECRETS

A content analysis of many leading textbooks regularly used in POM management courses reveals that no coverage is given to the issue. Of 29 mainstream texts examined, none cited trade secrets in the subject index (see Table 3). Many of these texts represent leaders in terms of classroom market share and as such educate many students in the POM field. It is surmised that the lack of trade secrets information in leading POM textbooks indicates a failure to recognize the importance that such a topic deserves and results in graduates within adequate knowledge to deal effectively with the trade secrets concerns of their future employers.

If the trade secrets issue was to be addressed in POM textbooks, the logical question is where to provide such coverage? Though trade secrets bridges a variety of topic areas, trade secrets should be addressed within coverage devoted to the competitive environment or strategy. In a text's coverage of strategy and competitive environment, technology and its impact on the firm are often addressed. Since trade secrets are often found in the technology arena, and offer competitive advantages to their owners, integrating the topic of secrets protection in this area appears sound. Providing adequate protection for a firm's secrets is a strategic issue that can and should be addressed in the strategy area. Regardless of where such coverage occurs, the important point is that it should occur. Coverage of trade secrets is necessary given today's work environment.

CONCLUSIONS

It should be recognized that a proactive stance needs to be taken with regard to the teaching of trade secrets protection. Production and operations management professionals need to recognize and provide for the protection of their firms' trade secrets. POM textbooks should recognize the value of trade secrets protection and provide information to students as to how best to protect trade secrets which will be entrusted to them in the course of their future employment. The topic appears not to be addressed in the majority of POM texts, potentially allowing trade secrets knowledge to slip through the cracks in the POM curriculum. Since adequate coverage of the topic appears missing, as this investigation indicates, it follows that the coverage of such an important topic and the ability of a POM education to adequately prepare students for future challenges is lacking. Trade secrets recognition and protection are important lessons to be learned. Trade secrets issues should be discussed and protection mechanisms should be taught in the POM classroom. It is time for POM students to become fully aware of the problems and issues they are likely to encounter in the work environment.

Table 3

Sample of Production Management Textbooks NOT Citing Information on Protection of Trade Secrets* Published Since 1990

Author(s)	Title	Publisher	Date
Martinich, Joseph	Production and Operations Management: An Applied Modern Approach	John Wiley & Sons	1997
Dilworth, James B.	Production and Operations Management: Manufacturing and Services	McGraw Hill	1996
Heizer, Jay & Barry Render	Production & Operations Management	Prentice Hall	1996
Melnyk, Steven & David Denzler	Operations Management: A Value-Drive Approach	Irwin	1996
Stevenson, William J.	Production/Operations Management	Irwin	1996
Vonderembse, M. & Gregory White	Operations Management - Concepts, Methods, and Strategies	West	1996
Aquilano, Nicholas, Richard Chase, & Mark Davis	Fundamentals of Operations Management	Irwin	1995
Chase, Richard B. & Nicholas J. Aquilano	Production & Operations Management: Manufacturing and Services	Irwin	1995
Finch, Byron J. & Richard L. Luebbe	Operations Management Competing in a Changing Environment	Harcourt Brace & Company	1995
Markland, Robert, Shawnee K. Vickery & Robert A. Davis	Operations Management: Concepts in Manufacturing and Services	West	1995
Russell, Roberta S. & Bernard W. Taylor III	Production and Operation Management	Prentice-Hall	1995
Gaither, Norman	Production and Operations Management	Harcourt Brace & Company	1994
Render, Barry & Jay Heizer	Principles of Operations Management	Allyn and Bacon	1994
Evans, James R.	Applied Production and Operations Management	West	1993
Heizer, Jay & Barry Render	Production and Operations Management Strategies and Tactics	Allyn and Bacon	1993
Nahmias, Steven	Production and Operations Analysis	Irwin	1993
Schroeder, Roger G.	Operations Management: Decision Making in the Operations Function	McGraw Hill	1993
Adam, Jr., Everett E. & Ronald J. Ebert	Production & Operations Management	Prentice-Hall	1992

Table 3 (cont.)

Sample of Production Management Textbooks NOT Citing Information on Protection of Trade Secrets* Published Since 1990

Author(s)	Title	Publisher	Date
Garvin, David A.	Operation Strategy Text and Cases	Prentice-Hall	1992
Gerwin, Donald & Harvey Kolodny	Management of Advanced Manufacturing Technology, Strategy, Organization and Innovation	John Wiley & Sons	1992
McClain, John O., L. Joseph Thomas & Joseph B. Mazzola	Operation Management: Production of Goods and Services	Prentice-Hall	1992
Muchnik, Michael	Complete Guide to Plant Operations Management	Prentice Hall	1992
Riggs, James L.	Production Systems: Planning, Analysis, and Control	Waveland Press	1992
Fogarty, Donald W., John H. Blackstone & Thomas R. Hoffmann	Production & Inventory Management	South-Western Publishing Co.	1991
Samson, Danny	Manufacturing & Operations Strategies	Prentice-Hall, Inc.	1991
Vonderembse, Mark A. & Gregory P. White	Operations Management: Concepts, Methods and Strategies	West	1991
Gaither, Norman	Production and Operations Management: A Problem-Solving and Decision-Making Approach	Dryden Press	1990
Krajewski, Lee J. & Larry P. Ritzman	Operations Management: Strategy and Analysis	Addison-Wesley	1990
Miglore, R. Henry & Walter Thrun	Production/Operations Management: A Productivity Approach	Nichols/GP Publishing	1990

*the term does not appear in the book's index

REFERENCES

Arnott, N. (1994, December). "Don't Look Now," ***Sales & Marketing Management***, 146(14), 52-57.

Baker, S. (1994, June 20). "Down and Dirty in the Steel Belt," **Business Week**, 3377, 44.

Bleakley, F. R. (1995, January 13). "Strange Bedfellows - Some Companies Let Suppliers Work On Site And Even Place Orders," **The Wall Street Journal**, pp. A1+.

Brian, C. (1994, July). "Lost Secrets = Lost Profits," ***Risk Management***, 41(7), 96.

Brown, T. (1994, August 15). "On the Edge: Without Job Security," ***Industry Week***, 243(15), 24-32.

Budden, M. C. (1995, April). "Can You Keep a Secret?" ***Business & Economic Review***, 41(3), 24-26.

Budden, M. C. (1989, November). "Keep Your Practice Secrets Secret," ***Dental Economics***, 79(11), 35-37.

Budden, M. C. (1996). ***Protecting Trade Secrets Under the Uniform Trade Secrets Act: Practical Advice for Executives***. Quorum Books, Westport CT.

Budden, M. C., Jones, M. A. & Budden, C. B. (1996, Summer). "Supplier Relationships and the Trade Secrets Dilemma," ***International Journal of Purchasing and Materials Management***, 32(3), 45-49.

Budden, M. C., Lake, R. C. & Lett, S. (1990, December). ***"Protecting Trade Secrets,"*** Management Accounting, LXXII(6), 45-47.

Budden, M. C., Lake, R. C. & Lett, S. (1991, January). "Protecting Trade Secrets," ***IEEE Engineering Management Review***, 52-55.

Budden, M. C., Lake, R. C. & Yeargain, J. W. (1995, Fall). "Strategic Planning for Protection of Business Secrets Under The Uniform Trade Secrets Act," ***Journal of Managerial Issues***, VII(3), 343-357.

Byron, C. (1991, April 1). "The Bottom Line - Garbage Time," **New York Magazine**, 16.

Carley, W. M. (1994, July 7). "Fare Game: Did Northwest Steal American's Systems? The Courts Will Decide," **The Wall Street Journal**, p. A1.

Carley, W. M. (1995, January 19). "A Chip Comes In From The Cold: Tales of High-Tech Spying," **The Wall Street Journal**, A1, 12.

Chadbourne, R. D. (1987, April). "Industrial Espionage: The Silent Road to Bankruptcy!" ***Supervision***, 49(4), 14-17.

Commissioners on Uniform State Laws (1980), "Uniform Trade Secrets Act," ***Civil, Procedral, and Remedial Laws***, West Publishing Company, 14, 537-551.

Cunningham, C. A. (1992, September 14). "Borland-Symantec Case Heats Up," ***PC Week***, 9(37), 1, 11.

"Mum's The Word", (1993, February 1). **Datamation**. 39(3), 19.

Doe, P. (1988, September 1). "Japan Starts Fighting for its Own Patent Rights," ***Electronic Business***, 14(17), 36, 38.

Electro-Craft Corporation v. Controlled Motion, Inc., 332 N.W. 2d 890 (Minn. 1983).

Guida, R. (1989, Fall). "The Costs of Free Information," ***Public Interest***, 97, 87-95.

Henderson, J. C. (1990, Spring). "Plugging Into Strategic Partnerships: The Critical IS Connections," ***Sloan Management Review***, 31(3), 7-18.

Henkoff, R. (1990, April 9). "Cost Cutting: How To Do It Right," **Fortune**, 121(8), 40-41+.

IMI-Tech Corporation v. Gagliani, et al., 691 F.Supp. 214 (S.D.Cal. 1986).

Ingrassia, L. (1990, February 28). "How Secret G.E. Recipe for Making Diamonds May Have Been Stolen," **The Wall Street Journal**, p. A1.

Jones, A. (1992, April 28). "CI versus Spy," **Financial World,** 62-64.

Lake, R. C., Budden, M. C. & Lett, S. (1991, August). "Trade Secret Protection," ***Internal Auditor***, 48(4), 43-48.

Maxwell, D.A. (January 1989). "Keeping the Secret in Trade Secrets," ***Security Management***, 33(1), 38-42.

Miller, M. W. (1992, July 15). "IBM Sues To Silence Former Employee," **The Wall Street Journal**, p. B1.

O'Neal, C. (1993, Spring). "Concurrent Engineering with Early Supplier Involvement: A Cross Functional Challenge," ***International Journal of Purchasing and Materials Management***, 29(2), 3-9.

Palmeri, C. (1994, September 26) "Dumpster Diving," **Forbes,** 154(7) 94.

Reifenberg, A. (1995, October 25). "How Secret Formula For Coveted Slick 50 Fell Into Bad Hands", **The Wall Street Journal**, pp. A1, A9.

Roberts, S. (1994, June 27). "Willis Corroon Cries Foul," **Business Insurance**, 1+.

Rockwell Graphic System, Inc. v. Dev Industries, 730 F.Supp. 171 (N.D. ILL. 1990).

Roush, C. (October 3, 1994). "Ransom Insurance for a More Dangerous World," **Business Week**, 132.

Selz, M. (1995, June 16). "Small-Business Owners Submit A Lengthy 'Wish List'," **The Wall Street Journal**, p. B2.

Stuart, F. I. (1993, Fall). "Supplier Partnerships: Influencing Factors and Strategic Benefits," ***International Journal of Purchasing and Materials Management***, 29(4), 22-28.

Stuart, F. I. & Mueller, P., Jr. (1994, Winter). "Total Quality Management and Supplier Partnerships: A Case Study," ***International Journal of Purchasing and Materials Management***, 30(1), 14-20.

Templin, N. & Cole, J. (December 19, 1994). "Manufacturers Use Suppliers to Help Them Develop New Products," **The Wall Street Journal**, pp. A1.

U.S. Government Printing Office (1994). ***Freedom of Information Act Guide and Privacy Act Overview.*** Office of Information and Privacy; U.S. Department of Justice, Washington, DC.

"Secrets and Settlements," (January 20, 1997). ***U. S. News & World Report***, 122(2), 18.

Zellner, W. (1991, April 1). "Dumpster Raids? That's Not Very Ladylike, Avon," **Business Week**, 3206, 32.