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A Needs Assessment Of The Knowledge, Skills And Use Of Finance Competencies By Human Performance Technology Practitioners

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A NEEDS ASSESSMENT OF THE KNOWLEDGE, SKILLS AND USE OF FINANCE COMPETENCIES BY HUMAN PERFORMANCE TECHNOLOGY PRACTITIONERS

by

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Approved by:

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DEDICATION

To my soul mate, lifelong partner and forever young husband, **Felix**

And to my father and mother, who passed on their good genes in me and instilled in me with morals and ethics.

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Unlike others, I did not have a dream to pursue a doctoral degree. “What for?” I asked. After five long years, I admit that it has been a worthwhile yet a bitter sweet journey. After all, what best can a woman do but better herself! I attribute my doctoral study solely and especially the writing of this dissertation to my advisor, Professor James Lee Moseley. Without his encouragement and his utmost dedication in teaching, I would not be able to complete the program. I was disciplined in Instructional Technology and Human Performance Technology, and also in the English language, the hardest language in the world to master.

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CHAPTER 1 INTRODUCTION AND STATEMENT OF THE PROBLEM

Measuring and linking worthy Human Performance Technology (HPT) interventions with financial data have been the opinion and advice of leaders in the field. Yet, there is a lack of empirical research confirming these opinions from practitioners and through their practices. Three comprehensive empirical studies in which a series of competencies of HPT practitioners were compiled, documented and validated are reported in the literature. The assessment of what finance knowledge and skills of HPT practitioners possess and how they apply their finance knowledge and skills, however, were not the focus of these studies. This needs assessment study investigates the finance knowledge and skills of Human Performance Technology practitioners. Taking a descriptive and statistical approach, it answers two categories of questions: (1) What finance knowledge do HPT practitioners possess? and (2) How do HPT practitioners use their finance knowledge and skills in their work?

Drucker (1979) reminded readers that "it is the practitioner rather than the scholar who develops the discipline, who synthesizes experience into testable concepts, that is, into theory, who codifies, who finds and tests new knowledge, and who teaches and sets the example" (p. 475). Reflecting on his statement, this study seeks answers directly from HPT practitioners. An online questionnaire was distributed to, and data will be collected from, HPT practitioners. Questions are designed to collect two levels of answers: Current (what is) and Future (what is desired), which will provide quantitative measures for the analysis and answers to the research questions of this study.

William Rothwell conducted and published the *ASTD Models for Human Performance Improvement*, a study commissioned by The American Society for Training and Development

(ASTD) in1999. In the monograph, Rothwell has identified fifteen HPT core competencies for practitioners: "Industry awareness, leadership skills, interpersonal relationship skills, technological awareness and understanding, problem solving skills, systems thinking and understanding, performance understanding, knowledge of interventions, business understanding, organization understanding, negotiating contracting skills, buy-in advocacy skills, coping skills, ability to see 'big picture', and consulting skills" (1999, p.18). His definition of *Business Understanding*, an adoption of McLagan's 1989 definition, relates to the focus of the current study. Both researchers defined *Business Understanding* as "demonstrating awareness of the inner workings of business functions and how business decisions affect financial or nonfinancial work results" (Rothwell, 1999, p. 21). The current study illuminates the finance knowledge, skills and use by HPT practitioners who consult, support, and complement client organizations in improving human performance that *affects financial work results*.

ASTD is aware of the importance of business understanding because the organization has designated one of its educational programs in business understanding for its members and practitioners. Business Essentials Certification is a program that "focus[es] on key business drivers: strategic planning, financial management, and marketing ... [and] is designed for workplace learning and performance professionals who want to increase their business skills and understanding, become more valuable to their organizations in their ability to accelerate business results, and move along a career path to higher levels of accomplishment and responsibility" (ASTD, 2008). And finance is one of the *key drivers* of *business understanding*.

The framework and significance of this research are supported by literature in the field of human performance and the literature in the fields of human resource management and organizational development. A concise review of literature is included here to support the

research framework of this study. A thorough and detailed review of literature is discussed in Chapter 2.

Stolovitch and Keeps (2006) defined Human Performance Technology as "a professional field of study and application, the main purpose of which is to engineer systems that allow people and organizations to perform in ways that they and all stakeholders value" (p. xiii). And Pershing (2006) defined HPT as "the study and ethical practice of improving productivity in organizations by designing and developing effective interventions that are results-oriented, comprehensive, and systemic" (p. 6). HPT has anchored its roots mainly in the field of Instructional Technology and other disciplines such as cybernetics, cognitive engineering, psychometrics, instructional design, behavior analysis, and many more (cf. Geis, G. L., 1986; Rosenberg, M. J., Coscarelli, W. C. & Hutchison, C. S., 1992; Stolovitch, H. D. & Keeps E. J., 1992a; Binder, C., 1995; Pershing, J. A., 2006). Educational or instructional technology focuses solely on improving human performance by means of education and instruction. HPT, on the other hand, "embraces the viewpoint that organizational effectiveness can be advanced by employing a wide range of interventions, including, but not limited to, instruction" (Molenda & Pershing, 2008, p. 74).

Perhaps, the practicing of HPT can be best described as shape shifters in the workplace[1] and organization. For example, Timm Esque, a training specialist in the 1980s at Intel Corporation and now a performance improvement consultant, described how his assignment of updating the training materials evolved into improving the process management of a factory. He analyzed and identified the performance gaps, then prescribed and implemented the performance intervention to close the gaps (Esque, 1998, pp. 185-192). Perhaps, the identification of the

[1] In this research, workplace, workgroup, and organization are synonyms.

profession and role of HPT practitioners are often embedded in “education and training, quality improvement, organizational development, performance technology, and others” (Esque & Patterson, 1998, p. x). Similarly, Langdon (2000) noted, “a performance consultant could spend a lifetime facilitating nothing but building and improving work support… some of these [performance consultants] are called trainers, while others go by names such as organizational development specialists, work simplification engineers, HR specialists, managers, and many others” (p. 208). Regardless of the descriptors or job titles, an HPT practitioner is to “focus on improving performance[s]. In operational terms, this suggests that he or she must be able to define both the desired level of valued performance and the current state, accurately measure the distance between these two and propose, design, perhaps even help implement cost-effective interventions to close gap” (Stolovitch, Keeps & Rodrigue, 1995, p. 41). These passages underscore the role of consultancy for HPT practitioners. And the consultant function of HPT practitioners is best defined by biech (2007, she spells her name with a small “b”) as “a specialist within a professional area who completes the work necessary to achieve the client’s desired outcome” (p. 1).

The work of HPT practitioners resides in business, aka work, workplace and organizations. As stated in the July, 2008 ISPI President’s brief, Matt Peters (past International Society of Performance Improvement president) communicated that “… we are expanding our presence in the corporate world because, as 2007 Annual Conference Closing Session speaker Roger Chevalier emphasized, that is where the majority of our members work and where many of our services are ultimately employed”. To improve human performance is to optimize the financial performance of a business. A liberal economist (cf. Economist, 1963), Friedman (1970) once said,

> There is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud (p.126)

Two decades ago, Carl Binder (1988) advised human resource development professionals to translate objectives and results into dollars, widgets and measurable performance because business people and accountants "relate to objective measurement" (p. 40). His advice must hold true today to our HPT practitioners. Similarly, Jerold Tucker stated bluntly, "If you want to bring something to the party when meeting with managers, you have to understand the financial and marketing language that they deal with every day" (as cited in Steinburg, 1991, p. 28). Clearly, HPT practitioners must speak the language of finance which suggests that they must possess the finance knowledge and skills so they can communicate, measure and link performance results to the finance of organizations.

Stolovitch, Keeps and Rodrigue (1995) have observed that the field continues to evolve because (1) other related research and fields from which our field draws are developing and (2) our pool of practitioners is growing. Stolovitch et al. (1995) identified these relating research and fields: "systems theory, learning psychology, instructional system design, cognitive engineering, information technology, ergonomics and human factors engineering, psychometrics, feedback systems, and organizational development" (p. 42). In addition, they have observed that the pool of practitioners not only consists of instructional designers and training professionals whose roles expanded to include performance improvement, but also consultants and professionals whose experiences extended to other fields. Even though HPT is evolving and changing, researchers believed that the field is continuously bound by deep common threads, models and vocabulary which allow us to function and communicate effectively (Stolovitch et al.,

1995). Hence, they argued that there was the greater need "for all HPT practitioners to possess a common, solid, shared, general foundation" (Stolovitch et al., 1995, p.42). They believed that our HPT practitioners "must acquire a wide range of skills that help organizations achieve their goals. The greater our skills, the greater our acceptance by business and educational communities" (p. 63). Building upon their reasoning, this needs assessment intends to find out what finance knowledge and skills HPT practitioners have and how they use this information by analyzing common threads, models and vocabularies.

In business, human performance revolves around the financial systems. In return, financial systems reward human performance. The recent global financial meltdown is an excellent example which underscores the reciprocal relationship of our financial systems with our workers, workplace, the nature of work, and the world (corporate social responsibility). The urge of linking HPT practices with financial measures is greater today than before. For example, in a recent *Performance Improvement* article, the expert practitioners described the increasing demands from their clients of showing both soft and hard measurable results at all levels in an organization -- worker, workplace and organization (Pershing, Lee & Cheng, 2008a and 2008b).

Various opinions, discussions and empirical research on competencies of HPT practitioners can be found in our body of literature. During the past fifteen years, three manuscripts of HPT practitioner competencies were published. They made significant contributions in providing the field with a model, a validation of key competencies and the identification of frameworks of competencies (Rothwell, 1999; King, 1998; Guerra, 2001). Not only did the model and competency frameworks guide the experienced and new practitioners in evaluating their own competencies, but they also established the standards of professionalism. Among the identified competencies, business competency and cost-benefit analysis were

mentioned. Finance was not a target competency. Hence, finance skills, knowledge and use of our practitioners were not studied and validated.

Many leaders in the field encouraged HPT practitioners to be involved in analyzing and relating financial data to clients' performance needs and organizational needs (cf. Van Tiem, Moseley and Dessinger, 2004; Pershing, Lee and Cheng, 2008a and 2008b). In 1978, Gilbert pointed out that a pile of data has no value to business until those data become information. Indeed, a balance sheet of a company or a budget report of a business unit makes no powerful statement until the numbers are tied to business results and human performances.

In 1992, Gilbert advised HPT practitioners with these words, "… direct and comparative measures of performance are not enough. We need to translate these measures into dollar values, or stakes … Performance engineers [HPT practitioners] should acquire basic financial skills to become adequate at estimating financial worth" (p. xvii). Similarly, Binder (1988) explained that "business people and accountants … when they measure performance, they count dollars, widgets, or other events or accomplishments per day, week, month, quarter or year" (p. 40). And Esque (2001) observed that:

> Today, a large percentage of businesses are run by financial professionals, and virtually every large business has a chief financial officer or equivalent … a relatively young profession, information technology has had a meteoric increase in responsibility in business organizations … many chief technical officers have joined chief financial officers on executive staffs. Anyone who has ever been victim of a poorly timed system failure recognizes the [financial] value that an effective information technology function can bring to an organization…Have you ever heard of a chief performance officer? … [or] viewed as consultants – respected members of the organization who are actively consulted before important performance related decisions are made? (p. 11)

Our leaders are suggesting that professional know how and/or specialty alone does not lead a performance professional to the board room or to be included on the executive management team.

It is the ability of demonstrating the net worth plus the professional expertise that would lead HPT practitioners to the strategic positions in an organization.

The fields of human resource and organizational development have been progressing in measuring and linking employee and workgroup performance with corporate financial data such as Return On Assets (ROA) and Earnings Per Shares (EPS). Their body of knowledge includes models and methods linking human resource and human performance to the organization's bottom line. In Chapter 2, leading research on cost-to- performance in these fields is cited. It is these kinds of empirical studies which are scarce in our field.

In advocating financial intelligence for every employee, Berman and Knight (2007) offered the following thoughts:

> Do you understand what it means when your CEO talks about EBIT (earnings before interest and tax), EBITDA (earnings before interests and taxes, depreciation, and amortization), earnings per share, and free cash flow? Can you explain a return-on-investment analysis? Do you know how your work in the company affects both cash and profit? If the answer to any of these questions is no, then you might be unable to participate fully in strategic planning sessions. How can you make the best decisions for your company if you don't speak the financial language and understand how your actions influence the company's bottom line? (p. 72)

Similarly, Marker (1995) has advocated the importance of speaking the language of clients. He noted, "they [HPT practitioners] must not only present problems, solutions, and benefits in general business terms, but that they also use language related to the specific business and context to which the intervention applies" (p. 26).

Brethower (2008) explained, "Research is about answering very specific and very small questions. Science is about making sense out of the answers…scientists and researchers create and organize scientific knowledge and engineers build on the knowledge to create practical

things… technology questions are often about how to do something better, faster, or cheaper … technologists often have the work of engineers to build upon" (pp. 4-8). He stated that human beings "have always been part of a knowledge economy… it becomes ever more important for performance improvers to understand how knowledge multiplies wealth" (p.2). Further he argued, "The interactions among science, research, engineering, and technology comprise a value chain for our work in performance improvement … where each one of us works within it, acted upon, can help each of us create value for self, family, clients, organizations and society" (Brethower, 2008, p. 2). Standing on Brethower's notion of "organization of knowledge creates knowledge" and "the technologist seeks to learn how to competently apply engineering knowledge to specific value adding work" (2008, pp. 7-9), this needs assessment will present the *What* and the *How* by assessing the finance knowledge, skills and use of finance by HPT practitioners.

Research Questions

This research seeks to answer the following questions:

1. To what extent is an HPT practitioner knowledgeable of financial statements and terms,
   i.e. Balance sheet - estimates and assumptions, liabilities and equity, expenses vs. capital, return on assets, return on investment, earnings per share;
   Cash flow – items to calculate cash, cash ratios, accounts receivable aging;
   Ratios – profitability, leverage, liquidity and efficiency ratios

2. To what extent does an HPT practitioner use financial data to justify expenditures in proposed or prescribed performance improvement interventions?

3. To what extent does an HPT practitioner analyze financial data regarding performance improvement interventions?
4. To what extent does an HPT practitioner translate financial data to performance improvement interventions?
5. How does finance knowledge apply in the work of the HPT practitioner?
6. What strategies do HPT practitioners use to gather financial data in an organization?
7. How does the HPT practitioner analyze financial data?
8. How do HPT practitioners use the synthesized financial data?
9. What strategies do HPT practitioners use to communicate financial data?
10. How does an HPT practitioner gain financial knowledge and skills?

Definition of Terms

This research is guided by the following terminology:

Accounting – "The system of recording and summarizing business and financial transactions and analyzing, verifying, and reporting the results; also**:** the principles and procedures of accounting" (Merriam-Webster Online Dictionary, 2009). In this study, accounting generates financial reports for finance which then are linked to worker, workgroup and organization.

Activity Based Management (ABM) – "A discipline focusing on the management of activities within business processes as the route to continuously improve both the value received by customers and the profit earned in providing that value. ABM uses activity-based cost

information and performance measurement to influence management action" (Stenzel & Stenzel, 2003, p. 295)

Balanced Scorecard – It is a performance improvement system which was introduced by Robert S. Kaplan and David P. Norton in 1992. Balanced Score Card helps an organization to advance and improve performance systematically. "The Balanced Scorecard approach retains measures of financial performance—the lagging outcome indicators—but supplements these with measures on the drivers, the lead indicators, of future financial performance" (Kaplan & Norton, 2001, p. 87).

Balance Sheet – A statement of financial condition at a given date (Merriam-Webster Online Dictionary, 2009).

Cash flow – An amount of cash that is available to meet payment of debts, salary and other expenses.

Competency – Knowledge and skills that a person possesses. A person's competency is observable and can be assessed, evaluated and measured by a set of standards and/or criteria (detailed definition explanation is in Chapter 2).

Debt to Equity Ratio – This ratio tells how much debt a company has for every dollar of shareholders' equity (owners' equity). To calculate, divide total liabilities by shareholders' equity

Earnings Per common Share (EPS) – This is a financial indicator of a company that Wall Street watches closely. Berman and Knight (2008) write, "Wall Street has 'expectations' for many companies' EPS, and if the expectations aren't met, the share price is likely to drop" (p.52). To calculate, divide company's net profit by the number of stock shares.

Finance – "The obtaining of funds or capital. The science or study of the management of funds" (Merriam-Webster Online Dictionary, 2009). The assets of an organization include both tangible materials and intangible materials such as employee's institutional knowledge and tacit knowledge of a process and procedures. In this study, finance reports (such as balance sheet, income statement and others) are linked and/or calculated to processes, outputs of worker, workgroup and corporation.

HPT practitioner –A person who assumes performance improvement roles in work, workgroup, workplace, and world. This person could be an internal employee or an external consultant. As Rothwell (1999) explains, "Just as actors and actresses assume roles in theatrical productions, so too are roles assumed by people who do human performance improvement work" (p. 17). Job titles are not the emphasis in this study.

Income Statement - A financial report that includes the revenues and expenses of a business as of a period of time, i.e. a month or a year.

Inventory turns ratio – This measure indicates management efficiency in managing its inventory. It is calculated by dividing average inventory over cost of goods sold. Investment in inventory can be very costly (Louderback and Dominiak, 1982). For example, a supermarket relies on volume sales in making profits on low margin food products, hence, rapid inventory turn is necessary (Louderback and Dominiak, 1982).

Knowledge – Knowledge refers to the facts and concepts that are stored in a person's brain. Knowledge can be retrieved and used by a person at will. A person demonstrates knowledge by performing and completing a task that requires specific facts and concepts. For example, a

person must be knowledgeable in finance and/or accounting when analyzing financials of a workgroup or an organization (detailed definition explanation is in Chapter 2).

Needs Assessment (NA) – Kaufman and English (1979) define *need* "as a gap between current outcomes or outputs and desired (or required) outcomes or outputs" (p. 8). Within the context of human performance improvement, Kaufman (2006) explains needs assessment as "a formal process that identifies and documents gaps between current and desired and/or required results… By starting with a needs assessment, justifiable performance data and the gaps between What Is and What Should Be will provide the realistic and rational reason for both what to change as well as what to continue" (p. 177).

Net present value (NPV) – It is a more complex method of calculating paybacks for upfront cash such as expenditure, investment or loan. "It takes into account the time value of money, and discounting future cash flows to obtain their value right now" (Berman and Knight, 2008, p. 188). To calculate, first obtain the *present value*, then minus the initial cash outlay with *present value*.

Open Book Management (OBM) – Employee participation in the running and managing the financials of the company is the crux of OBM. Employee involvement in the company's finance helps and supports business decision making that benefits the company. Jack Stack, CEO of Springfield Remanufacturing, "is credited with formalizing and implementing the first fully developed example of open book management" (Davis, 1997, p. 7).

Return On Asset (ROA) – "ROA is a measure of operating efficiency, of how well the firm (or, more correctly, its management team) has used the assets under its control to generate income" (Louderback and Dominiak, 1982, p. 709). It is calculated with average total assets over net income + interest + income taxes.

Return On Equity (ROE) – "Return on equity is a measure of operating efficiency. Common stockholders [aka owners' equity] are also concerned with the return on their investment, which is affected not only by operations but also by the amount of debt and preferred stock in the firm's capital structure" (Louderback and Dominiak, 1982, p. 710). It is calculated with average common stockholders' equity over net income – preferred stock dividends (if any).

Skills – Skills are the observable actions of a person. For example, an HPT practitioner demonstrates knowledge to clients, via verbal and written communications, deliverance of needs analysis and/or evaluation projects, identification of performance gaps, and implementation of a project or task (detailed definition explanation is in Chapter 2).

Total Quality Management (TQM) – It is "quality control, management, and assurance [and] is the system used to ensure products and services which meet customer needs and exceed customer expectations" (Van Tiem, Moseley & Dessinger, 2004, p. 210).

Significance of the Study

As stated previously, there is a void in empirical research of finance knowledge and skills and the application of finance knowledge and skills even though there are many articles written on the need for linking finance data or financial measures to prove and demonstrate the worthiness of the performance improvement intervention to worker, workgroup and organizations. The contribution of the current study is to validate various opinions empirically which can affirm the need for professional advancement of HPT practitioners. This study also suggests that similar research can be conducted for other core competencies.

Carl Binder (1995) pointed out that the field produces very few "articles or chapters [which] contain measures of performance, comparisons of measured results, or measures of

change in behavior or accomplishments" (p. 95). One of the measurements suggested is *Cost counting by dollars* (Binder, 1995, p. 108). This study contributes to the findings on the *What* and the *How* knowledge, skills and use of finance which empower HPT practitioners to assess and measure performance improvement interventions in *cost counting by dollars*.

Altschuld and Kumar (2010) believed that a needs assessment serves two purposes; one is to identify gaps (i.e. what should be and what is), and the other is to cause change (i.e. actions, ways of thinking) based on gaps identified. This study will satisfy the first and second conditions with findings that will provoke discussions and thoughts among practitioners and scholars.

Lastly, the literature cited in this study capitalizes on empirical studies from the fields of human resource and organizational development that can be modeled or adapted for future studies in human performance technology. Further, the findings of this research will help enlarge the knowledge and skills base of our current practitioners and future practitioners.

Conclusion

In this discussion, the statement of the problem for a needs assessment of finance competencies for performance improvement interventions of practitioners is discussed. The framework of the study is supported not only with the literature in the field but it is also extended to the fields of human resources and organizational development. The research questions in the study are designed to assess the finance knowledge and skills of HPT practitioners and how they apply their finance knowledge and skills to practice. The discourse on the significance and potential limitations explains the strengths and weaknesses inherent in the research. It is the balance of the strengths and weaknesses of this study that contributes to the body of knowledge in the field.

Chapter 2 presents a complete review of literature that is pertinent to this study. The chapter provides in-depth and relevant discussion of definition, fundamentals, principles, models, and methods in the field of HPT and the fields of human resources and organizational development.

CHAPTER 2 REVIEW OF RELATED LITERATURE

The framework of this literature review extends beyond the body of knowledge in the field of HPT. HPT literature and empirical research that are relevant to this study are reviewed. It begins with (1) the definition of competency, knowledge and skills, (2) the field of HPT and its principles, models, and its practitioners' roles, and extended to (3) literature and research of cost-to-management in the fields of Human Resource Management and Organizational Development. A discussion of finance for non financial personnel concludes this chapter.

Competency, Knowledge and Skills

Lucia and Lepsinger (1999) defined competency as "the knowledge, skills, and characteristics needed to effectively perform a role in an organization" (p. 5). Parry (1998) noted that competency "is a cluster of related knowledge, attitudes, or skills that affects a major part of one's job (i.e. one or more key roles or responsibilities); that correlates with performance on the job; that can be measured against well-accepted standards" (p. 60). Stolovitch, Keeps and Rodrigue (1995) defined skills as the "practical ability and dexterity; knowledge; understanding; ability; proficiency" (p. 44). We might draw the conclusion that a competency contains knowledge and skills of a person.

In his recent writing, Romiszowski (2009) gave these definitions to knowledge, skill and competency,

> *Knowledge* is most commonly defined as information of which a person, organization, or other entity is aware. Skill is typically defined as the capacity to perform a given type of task or activity with a given degree of effectiveness, efficiency, speed, or other measure of quantity or other measure of quantity or quality. *Skills* are typically classified according to the parts of the executing organism that are predominantly involved in the execution and management of performance…*competence* (or competency), in the technical sense used in recent educational and corporate human development contexts, is

> often defined as the cluster of skills, abilities, habits, character traits, and knowledge a person must have in order to perform a specific job well. (pp. 202-203)

Analogically, we might think competency is the hood of a car; knowledge and skills are what-is under the hood. The current research is not to find out everything that is under that hood. This research aims to find out the *What* (finance knowledge and skills of HPT practitioners) and the *How* (application of finance knowledge and skills of HPT practitioners) in workplaces and organizations.

The Field of HPT

Pershing (2006) discussed the history of the definition of HPT and lists the variations of the definition of HPT published in the past four decades. He provides his own definition of HPT and underscored the term *study* in his definition because:

> Study means that human performance technologists carefully examine and analyze questions that arise in understanding and applying their knowledge and skills … [and is the basis for conducting] *disciplined and systematic* inquiry … [study] includes both quantitative and qualitative approaches to research as well as philosophical analyses, historical investigations, theorizing and theory building, model development, and evaluation. (Pershing, 2006, p. 9)

Defining HPT is pivotal because it provides the structure for research and practice. Likewise, there is much discussion about the need for more empirical research; nevertheless, the current body of knowledge does contain a rich set of studies considering that the field is young (cf. Marker, Huglin & Johnsen, 2006). The three evolutions of HPT handbooks (cf. Stolovitch & Keeps, 1992b; 1999, Pershing, 2006) are the best indication of the continuous stride and growth in the field as well as its theoretical roots, its ability to draw and integrate strengths from other fields and its practice in improving human performance. In this section, literature that is most

relevant to this research such as empirical studies of competencies of HPT consultants, the basis of system and systems theory of the HPT model, and performance alignment are reviewed.

HPT Fundamentals and Principles

Concepts and principles of General Systems Theory, systems, results and values have been reinforced in monograph and periodicals in the literature. These concepts underpin the fundamentals for human performance. In a classic source, Rummler and Brache (1988) explained the workings of a performance system: "every individual operates within the context of a performance system … improvements in individual and organizational performance will happen only if we understand and manage the variables in that system" (p.47). In a nutshell, a performance system (i.e. an organization) contains a nest of sub systems, the outputs of sub systems (outputs generated by individuals and processes) effect and contribute to the system (Rummler and Brache, 1988).

Many of the influential theorists and professionals in HPT underscored research from which the field forms its bases: general systems theory, behavioral and cognitive psychology, communication theory, information processing, for our practice and research (Finn, 1960, Ely, 1970, Gilbert, 1978, Geis, 1986, Hutchison, 1989, Hutchison & Stein, 1997, Richey, 1986, Seels & Richey, 1994, Januszewski, 2001). For instance, Brethower (1999) stated:

> General systems theory provides basic concepts that integrate ideas from many different disciplines and subdisciplines that are relevant to HPT. These include not only behavioral psychology … but also economics, psychology, sociology, accounting, the cognitive sciences, finance, management, compensation practice, and benefits administration (p. 68).

He described seven general systems principles and they are the principles of open systems, information processing, guided systems, adaptive systems, energy channeling, environmental

intelligence, and subsystem maximization (Brethower, 1999). These system principles enabled HPT practitioners to analyze and to understand the performance needs of worker, work, workplace, and world quickly and deeper (Brethower, 1999, pp. 69-70).

The academics and practitioners in HPT characterize the field as a broader and a holistic field. For example, Hutchison (1990) believed that our systems and performance technology approach was broader, holistic, systems, systematic and was driven by results. Many of them emphasize the economic value and results of our delivery practice. To cite a few, Finn (1960) stated that "the educationist, in considering the effect of technology on the instructional process must remember that, in addition to machinery, technology includes processes, systems, management and control mechanisms both human and non-human, and, above all, the attitude and difficulty, the feasibility of technical solutions, and the economic values – broadly considered – of those solutions" (p. 10). Ely (1970) said, "functions are the actions performed in the development and use of media in teaching: management, devaluation, design, research, production, utilization, support-supply, training, dissemination, adaptation, and costing" (p. 91). Gilbert (1978) noted that it was the accomplishment that counts not what was done, when he said, "all engineering begins with the simple economic purpose of creating valuable results at a cost that makes those results worth it" (p. 17). And Geis (1986) said, "establishing the fact that there is indeed a problem permits the technologist to take the second step: determining the value of the problem; that is, asking how much a solution is worth" (p. 6).

HPT Models and Methods

HPT casts its roots deeply in many fields, especially in the field of Instructional Technology and in the study of instructional design. As such, HPT is much enriched and

benefited from research and studies in instructional technology and instructional design. Richey and Klein (2007) proclaimed in their recent book on design and development research, "the field [instructional technology/instructional design], of course, is not devoid of research. A large and comprehensive base of knowledge informs our work" (p. 3). In parallel, a lot of work has also been done and countless methods, tools and aids were published in the HPT field. This section of the literature review provides a representation of the HPT models and methods that are most relevant to this research which includes the ISPI 5-stage HPT model, Harless' Front End Analysis, Kaufman's Needs Assessment, Kaufman's Organizational Elements Model and Langdon's Language of Work (Van Tiem, Moseley & Dessinger, 2004, Harless, 1973, Kaufman & English, 1979, Kaufman, Oakley-Browne, Watkins, & Leigh, 2003, Langdon, 2000).

Today, HPT is facing a world that "has entered a new economic era, characterized by rapid change, heightened competitiveness and unprecedented productivity challenges" and our practice of HPT focuses more than ever before on "the world's most critical resources: *people*" (Van Tiem et al., 2004, p. 6). They posited that "[H]PT practitioners use a common methodology to understand, inspire, and improve people" (Van Tiem et al., 2004, p. 2). They presented an expanded 5-stage HPT model which underpins the HPT theoretical bases and depicts the HPT practice as an iterative process for continuous performance improvement and explained that the original HPT model developed by Deterline and Rosenberg and published by ISPI identified but not defined intervention implementation and evaluation Van Tiem et al., 2004). This 5-stage HPT model "expands the original HPT Model to cover the entire performance improvement process by defining intervention implementation and evaluation" (Van Tiem et al., 2004, p. 6). The five stages are "Performance Analysis, Cause Analysis,

Intervention Selection [Design and Development], Intervention Implementation and Change, and Evaluation" (Van Tiem et al., 2004, p.7).

Front-End Analysis (FEA) is a model used by HPT practitioners to identify the real needs (not wants) and diagnose the real cause (root cause) of a performance improvement issue (cf. Harless, 1973). Harless' FEA model was about spending money wisely so that unnecessary spending on improving performance is avoided. To illustrate how to use the model, Harless listed six goals and the 13-question procedure for HPT practitioners and workplace management to follow (Harless, 1973, pp. 232-233; 236-238).

Harless (1982) believed that an HPT practitioner must ask two questions at the start of every project: "What performance and whose performance need influencing?" and "What class(es) of intervention is/are indicated?" (p. 106). In his often cited workbook *An Ounce of Analysis Is Worth a Pound of Objectives*, Harless led readers through the FEA process: asking questions (i.e. The 13-questions), defining causes (skills/knowledge, environmental, motivation/attitude), describing mastery performance, preparing objectives then analyzing objectives (cf. Harless, 1970; 1973). The centerpiece of FEA was to cast a wider net that would not only identify needs of skills and knowledge of workers, but also would uncover political nuances in workgroups and in organizations (cf. Harless, 1970, Harless, 1973, Harless, 1982).

Harless (1973) categorized needs assessment as an *alternate process* to FEA (p. 234). He said, "this alternate form of full-blown FEA entails using the process to determine what instruction or guidance problems exist in the organization – including specification of what other kinds of problems exist, but without recommendation concerning what-to-do-about-them" (Harless, 1973, p. 234). In contrast, Kaufman's 10 step needs assessment procedure presented an

inclusive organizational process for identifying and defining true performance improvement needs. Kaufman (1986) explained that these steps were derived from "a holistic conceptual framework … the Organizational Elements Model" (pp. 25, 34). Over the span of thirty years, needs assessment has extended its application from education and organization to society (cf. Kaufman & English, 1979, Kaufman, 1986, Kaufman, R., Oakley-Browne, H., Watkins, R., & Leigh, D., 2003, Kaufman, 2006).

The Organizational Elements Model (OEM), a performance improvement model, "identifies what an organization uses (inputs), does (processes), produces (Products), and delivers (Outputs) and the consequences (Outcomes for external clients and society" (Kaufman et. al, 2003, p. 64). The OEM model "helps [HPT practitioners and management] to distinguish between desired organizational results and the organizational efforts required to produce the results at three levels" (Kaufman et al., 2003, p. 79). According to Kaufman's OEM model, an organization is responsible for three levels of results: Mega (Outcomes) at societal level, Macro (Outputs) at organizational level, Micro (Products) at operational level. To produce or attain results, *planning and doing* must be the focus. All results are equally important. Most importantly, Kaufman et al. (2003) noted, "defining and linking results at the Mega, Macro, and Micro levels is one of the critical success factors for strategic thinking and planning" (p. 65). These results are continuously generated via the interplay and interlink of processes, feedback loops and consequences. Process, feedback and consequences form the engine that move an organization. In other words, workers and workplace generated processes, feedback relay *cause and effect* to processes, and processes generated consequences. OEM is "concerned with linking and aligning the consequences that occur at the Mega, Macro and Micro levels" (Kaufman et. al, 2003, p.70).

Bernardez, Kaufman & Valdez at the April 2008 ISPI conference discussed a business case demonstrating the utility of the Performance Creation Model which showed the top down and bottom up alignment and linkage with financial results. They said that the Performance Creation Model was a wealth creation double bottom line measurement that embraces profit and loss, survival and wealth creation of a corporation or organization (Bernardez et al., 2008, slide 2). Their presentation used the language of finance, illustrated the worth of performance improvement with financial results, and supported their model with a real business case.

When the Language of Work was first introduced by Danny Langdon, the emphasis was on speaking a common language between workers, managers, executives and workgroups and on fostering a harmonious business environment. Langdon (1995) said,

> [The Language of Work], this super glue, more than any other business glue, does a particularly effective job in promoting business harmony. In the context of continuous improvement processes such as TQM, this super glue provides the way to build a positive "culture," because everyone is speaking a common work language". (p. 45)

In his 2000 manuscript, Langdon focused the Language of Work more towards aligning performance within an organization. And the application of the Language of Work was to help business and management achieve desired performance by speaking the common language (Langdon, 2000). Langdon (2000) stated, "performance alignment assures that all the work in a business is in harmony so that the organization can achieve its common mission: surviving while meeting its client needs" (p. 1). He considered that work alignment was performance alignment (Langdon, 2000). He believed that only those executive, management and workers who truly understood and desired performance alignment could achieve or attain the desired performance alignment in the workplace (Langdon, 2000, p. 1).

The Language of Work model was also known as a 6:4:4 model which consists of:

> Six elements that define performance (input, conditions, process element, output, consequences, and feedback); four levels of business (business unit, core process, individual jobs, and work groups) performance, each of which can be defined and aligned to one another using the proforma[2]; and four layers of performance (behavior, standards, work support, and human consonance). (Langdon, 2000, p. 15).

Hence, the utility of this model was a method for facilitating human performance improvement projects/programs from analysis, intervention selection to measurement. Similar to Kaufman, Langdon emphasized analysis, feedback and results in the implementation of his model (cf. Langdon, 2000; Langdon, 2009). Langdon (2000) believed that the Language of Work model, an integrated systems model, provided a platform on which everyone in an organization spoke the common language which he believed was pivotal for achieving *work alignment and performance improvement* (p. 271). After consulting with Life Company Reengineering, Langdon (n.d.) stated in a case study that additional parts were added to the model, hence, the *New* Language of Work model: "Standards (what will the work rise to?), Support (what needs to be in place for the work to get done?), and the Noise (which are the articulation of the attitudes and behaviors- including managerial incompetence, racism, sexism, etc. that prevent good work from being done" (pp. 16-17).

In both unpublished cases (AQUA case study and Life Company Reengineering), Langdon demonstrated and documented the utility of the Language of Work model with real business projects. Unlike the case of Bernardez, Kaufman & Valdez, financial results (financial numbers) were explicitly stated, linked and aligned with performance improvement interventions at Micro, Macro and Mega levels; whereas, Langdon's cases were documented with the focus on

[2] Langdon defines performance with six components: input, condition, process element, output, consequence, and feedback. He says, "I have developed a proforma model to show the relationship among these key components" (p. 12). Proforma, 4 levels of performance and 4 parts to performance constitute the Language of Work model (p.11).

the application process of the Language of Work model and demonstrated financial results implicitly. For example:

In the AQUA case study:

> "The new unit provided support for all the IT related needs an operating unit might have" (p. 11) – change the unit from providing little support to the line departments to a value-add unit in turn the unit becomes an internal profit center.
>
> "The time required from beginning to end was less than 120 calendar days…the Language of Work model not only allowed the new structure to emerge organically, but served as a change intervention itself" (pp. 11-12). – illuminates the worth of performance improvement intervention. When the corporation operates efficiently, it becomes profitable.

In the LIFE company case study:

> "$1 million in savings was identified immediately as current processes were made visible" (p.9) – states the financial value of the performance improvement process.
>
> "It [the management] was thought that 25 job titles existed; 81 were found and mapped…3 management jobs were identified to support the 25 jobs… structure designed. 90% of displaced employees found new jobs [within and outside of LIFE company]" (pp. 9-10). – illuminates the value of performance improvement process and demonstrates a *human* way of reengineering, in return, the company contains its cost and operates effectively and efficiently hence the company becomes more profitable.

Three Comprehensive Empirical Research Studies of HPT Competencies

There were three comprehensive empirical researches conducted on identifying competencies of our practitioners in the past 15 years: Rothwell's *ASTD Models for Human Performance Improvement*, King's *Practitioner Verification of The Human Performance Improvement Analyst Competencies and Outputs* and Guerra's *A Study To Identify Key Competencies Required of Performance Improvement Professionals*. Each research study is reviewed as follows.

William Rothwell (1999) was commissioned by The American Society for Training and Development (ASTD), to conduct an empirical study on Human Performance Improvement Roles, Competencies and Output. He noted that, "the purpose of this study is to lay the foundation for future work on human performance improvement and is descriptive and exploratory in nature" (p. 2). This research was categorized in three phases. In Phase I, Rothwell's study included a compilation of competencies from extensive literature reviews in human resource development, human performance improvement, and other related fields. In Phase II, Rothwell (1999) described it as a "reverse Delphi procedure", because he noted,

> Most Delphi studies start with a small amount of information that is expanded upon by expert respondents during the Delphi process. However, since the experts in Phase II distilled many competencies associated with human performance improvement to those considered most essential, they actually participated in a reverse Delphi procedure. (p. 2)

In Phase III, Rothwell (1999) and his research team employed "a panel of experts … to review a human performance improvement process model and complete a final round of the reverse Delphi process in order to verify the list of competencies associated with human performance improvement work" (p. 2).

The ASTD Human Performance Improvement Process Model served as the framework for Rothwell's study to (1) identify HPI roles, (2) identify HPI core competencies, (3) identify specific competencies that apply to the HPI roles, then (4) link outputs to those competencies. This model is almost identical to the Human Performance Technology Model (Van Tiem, Moseley and Dessinger, 2004, p. 3). It is noteworthy that HPI and HPT are synonymous. ASTD uses HPI and ISPI uses HPT. However, ISPI is suggesting that we eliminate <u>technology</u> in the initials HPT and substitute <u>improvement</u> to be more user friendly with the business community

(J. L. Moseley, personal communication, March 19, 2010).

Rothwell (1999) rationalized that the roles performed by our HPT practitioners gave identity to the profession rather than traditional job titles and/or job descriptions. He said, "while expert mastery of all roles is not expected of those doing human performance improvement work, … there is a relationship between the steps in the human performance improvement process model and the roles of people who do human performance improvement work" (Rothwell, 1999, p.18). The four HPI roles Rothwell (1999) identified were Analyst, Intervention Specialist, Change Manager, and Evaluator. Further, he identified 15 core competencies which were "essential to all roles and across all steps in the human performance improvement work" and 23 specific competencies "associated with each role played" (Rothwell, 1999, pp. 18-19). These competencies were listed on pages 2 and 3. Lastly, Rothwell (1999) linked outputs to competency and role. Perhaps, outputs could be briefly explained as the deliverables that HPT practitioners produce during and at the end of a project. Such deliverables could be a progress report, feedback, a front end analysis report, cause analysis, prescribed interventions, explanation of an implementation of interventions, and various evaluation projects.

Noting that there was a lack of practitioners' validation of Rothwell's Models, King (1998) corroborated the role of Analyst in human performance improvement in his doctoral dissertation. King (1998) devised a Likert scale instrument of 52 questions and surveyed a random sample of 1,000 individuals from the International Society for Performance Improvement membership list. King (1998) chose the Analyst to be validated first because of "its importance to the field of human performance improvement" (p. 100). King's (1998) questions were created based on the competencies and outputs identified in the role of Analyst. The aim of King's (1998) study was to validate the top layer competency (i.e. the role of Analyst) not the depth (i.e. skills and knowledge of the competency). For example, in King's (1998)

survey question #15 Data analysis and interpretation plans; #32 Strategies for analyzing the root cause(s) of performance gap, #37 Business/organization plans, there were no underlying questions such as types of data collected, kinds of analysis used or types of plans used and methods of interpretation of a plan. King's (1998) findings perhaps were useful information to practitioners in the field, but his study was not designed to uncover skills or knowledge of competencies.

Guerra (2001) observed the paradigm shift of the field which might lead to a shift of competencies of our practitioners. She noted that "Kaufman (1972; 1992) has stressed the criticality of shifting from a focus on means (e.g. training) to results (i.e. performance)" (p.1). Guerra (2001) cites a survey result in *Training and Development* conducted in 1995, where "40% of respondents in corporate settings said that the title 'performance improvement specialist' described them best" (p.2). She embarked her dissertation on identifying key competencies of our practitioners (Guerra, 2001). The crux of her study was to "identify key competencies required of successful performance improvement professionals and determine with what frequency performance improvement practitioners both feel they should apply and currently apply each of the presented competencies" (Guerra, 2001, p. 49). In addition, a descriptive research method was adapted in querying experts' opinions "with regards to these same variables (i.e. frequency of application of these competencies by performance improvement practitioners)" (Guerra, 2001, p. 49).

As Guerra (2001) noted, "the basis for the competency model proposed in this study was the A^2DDIE model: Assessment, Analysis, Design, Development, Implementation and Evaluation" (p. 15). A^2DDIE was an enhancement to the basic ADDIE model (Analysis, Design, Development, Implementation and Evaluation). She administered a web-based survey to 740

International Society of Performance Improvement (ISPI) members and the questions based on the A^2DDIE, were proofed by an expert panel of 4 pre-selected individuals who held high positions and/or deemed as high profile in the ISPI organization (Guerra, 2001). This thorough study not only contributed an enhanced model, A^2DDIE, but also identified and validated a rich set of competencies which are useful for novice and practicing professionals in human performance. The set of competencies defined and validated are significant to our field; nevertheless, these competencies might be related, but not specifically connected, to this study.

Role of HPT Practitioners

Hutchison (1989) and Hutchison and Stein (1997) described how their professional roles transformed from instructors, instructional designers, training managers to performance technologists. They ascertained that they maintained a broad range of skills in meeting the demands of those different roles. Therefore, they insisted and maintained that HPT practitioners must possess a broad range of skills so that they could function effectively (Hutchison, 1989; Hutchison and Stein, 1997). Similarly, based on the survey she conducted and literature reviewed by others, Gayeski (1995) discussed the evolution of our field and how our practitioners' role changed from an instructional focus to a broader performance improvement focus. She said, "the evaluation of their [HPT practitioners] work shifts from focus on customer satisfaction with projects (e.g., How much did you like the course?) to measures of change in organizational performance (e.g. How much did this intervention earn or save the organization?)" (Gayeski, 1995, p. 15). Gayeski (1995) commented that HPT practitioners must develop professional specialty areas as well as meeting the evolutionary demand for producing "bottom-line results" and expanding HPT professional territory (which requires broader skills).

Although empirical study of finance knowledge and skills is sparse in HPT, the following two writings are particularly relevant to the current study in connecting finance knowledge and skills to HPT practice. First, Hutchison and Stein (1997) believed that a performance improvement practitioner is a generalist. The ability to identify performance gaps and provide interventions to close performance gaps required the practitioner to have a broad knowledge and skills base. They believed that a performance practitioner should

- be expert in 15-25 or more tactics across 10 or more of the strategy areas listed,
- be able to custom design a solution for any set of constraints that would stand up to the scrutiny and evaluation of other experts
- have working knowledge of 45 to 75 or more tactics across 15 or more strategies and be able to design and implement a number of tactics within each of those strategy areas,
- know the basic tenets or principles in half or more of the tactics and be able to recognize expertise in them and,
- have contacts with experts in all of the strategies (Hutchison and Stein, 1997, p. 28)

As cited by the authors, this list was compiled based on Survey Results Regarding Strategies and Tactics for Organizational Performance Improvement which is an unpublished working document by C.S. Hutchison and J.R. Carleton. The Financial Systems were one of the strategies and tactics that Hutchison and Stein (1997) identified and they explained,

> Financial systems incorporate the processes, methods, and policies governing how finances are managed and accounted for and the methods and frequency with financial information is generated. System elements include forecasting processes, pricing systems, budgeting and planning systems, accounting processes and procedures…financial systems are listed as follows: account and market analysis, cost accounting systems, activity accounting systems, credit systems, bartering systems, financial forecasting systems, budgeting systems, financial tracking systems, capital investment or spending systems, international exchange systems, cash flow analysis systems, and internal and external pricing systems . (p. 30)

However, their view of HPT practitioners possessing a wide variety and range of skills and knowledge is not entirely shared among professionals in the field. In their discussion on change management, Spannaus, Binkert and Lippit (1998) noted,

> In observing that the purpose of change is to improve organizational performance… the importance of having all stakeholders involved in the change process suggests that, from the beginning, it is essential that all stakeholders have important and visible roles in the change process. Even if it were possible for one individual, or a small group of individuals, to have expertise in all the disciplines necessary to make change happen [Hutchison and Stein, 1997] doing so would not be effective (pp. 1-2).

Second, Van Tiem, Moseley and Dessinger (2001) named several financial systems interventions in their volume and explained, "the financial picture is key in determining business needs, performance needs, learning needs and work environment needs" (p. 278). They listed several tactical and commonly known financial data reports and intervention instruments such as forecasting, budgeting, cash flow, asset acquisition and management also identified the Open Book Management (OBM) as a viable financial systems intervention. This research was interested in finding out whether HPT practitioners have knowledge, skills and use of financial systems such as OBM.

Linking Human Performance to Organizational Performance with Financial Data

Having reviewed literature in the fields of human resource development (HRD) and instructional technology (IT), Demps (2008) suggested that there were significant overlaps in the two fields. Even though Demps' literature review was narrowly focused on instructional design and development in IT and training and development in HRD, she pointed out the aims of the two fields were similar, especially in their shared vision of improving human performance. The parallelism of domains, theoretical foundations of the two fields perhaps allow the possible extension of the two fields in their research and practices. In the past 10 years, there were many empirical and modeling research studies on correlation of performance of workers and workgroup with organizational financial performance from human resource management to HRD; yet, there was a scarcity of similar empirical literature and study in the HPT field.

Rothwell (1999) cited that the top two of the thirteen future implications that could impact the work of HRD were "(1) increased pressure and capacity to measure workforce productivity, performance, cost-effectiveness, and efficiency, (2) increased pressure to demonstrate the value, impact, quality, and practicality of HRD services" (McLagan's Models for HRD Practice, 1989 as cited in Rothwell, p. vii). These citations hold true to current organizations. The need to justify expenditure and prove monetary worth of human improvement activities are greater today than ten years ago, particularly under our current national and global economic climate.

Swanson (1999) has long been researching and advocating the pivotal need of theoretical foundations for performance improvement theory. He believed that our theory should be anchored on ethics and be established on economic, psychological and systems theories. He believed that demonstrating economic evidence is "primary to survive along with its financial metrics at the organizational level" (Swanson, 2001, p. 11). Swanson (1998) pointed out that "any organization that remains alive will ultimately judge each of its components from a return-on -investment (ROI) framework and it will do so with or without valid data" (p. 285). He asserted that every group in an organization must prepare its own budget, forecast salaries and be ready to defend its program and project expenses to its top management (Swanson, 1998). He asserted that our practitioners must think in economic terms when considering improving human capital and process at work and workplace (Swanson, 1998).

Huselid (1995) conducted extensive empirical research on the management and practices of human resources (productivity and turnover) and corporate financial performance (10-K reports and firm-level data) of 968 firms. Based on accounting data and High Performance Work

Practice[3], he reported the positive correlation of employee productivity and performance with corporate financial performance. He discussed his findings as follows:

> Across a wide range of industries and firm sizes, I found considerable support for the hypothesis that investments [human interventions] in such practices are associated with lower employee turnover and greater productivity and corporate financial performance. That my results were consistent across diverse measures of firm performance and corrections for selectivity and simultaneity biases lends considerable confidence to these conclusions. The magnitude of the returns for investments in High Performance Work Practices is substantial. A one-standard-deviation increase in such practices is associated with a relative 7.05 percent decrease in turnover and on a per employee basis, $27,044 more in sales and $18,641 and $3,814 more in market value and profits, respectively. (Huselid, 1995, p. 667)

Huselid (1995) suggested that High Performance Work Practices might translate into higher wages and benefits; however, the use of these practices showed lower turnover and greater employment security, hence, improved human performance.

Schneider, Hanges, Smith and Salvaggio (2003) extended their research on prior studies to find stronger correlation of employee attitudes and organizational financial and market performance:

> The present study is in the same spirit as those by Denison (1990) and Ostroff (1992), with the one major exception: Both employee attitude and organizational performance data were collected and analyzed over time, permitting some inferences regarding priority in causal ordering. Thus, in the present data set we are able to make inferences about whether employee attitudes are the stronger cause of organizational performance than the reverse. (p. 837)

[3] Huselid explained that accounting data "are often the focus of human resource managers who must allocate scarce resources" (p. 652). He used both market-based measure (Tobin's q) and gross rate of return on capital (an accounting data) for corporate financial performance measures in his research.
Based on the U.S. Department of Labor 1993 High Performance Work Practice and an empirical research conducted by Delaney, Lewin, and Ichniowski 1989, Huselid came up with 10 human resource management practices and added three more to his human performance correlation to corporate financial performance. The human resource practices included in his research spanning from employee attitude, labor management participation, information sharing to training received by a given employees

Using data of employees obtained from various companies, they investigated the relationship of financial and market performance data to employee attitudes in organizations. They related seven employee attitudes (satisfaction with empowerment, job fulfillment, pay, work group, security work fulfillment and overall job satisfaction [OJS]) with Return On Assets (ROA) and Earnings Per Share (EPS) over four years (Schneider et al., 2003). Schneider et al. (2003) found that "three of the employee attitude survey scales revealed an interpretable significant pattern of relationships with ROA and EPS: satisfaction with pay, satisfaction with security and OJS … the other dimensions of employee survey reveal sporadic significant correlations with ROA or ESP at different points in time" (p. 842). Interestingly, their findings showed positive relationships of attitudes concerning Satisfaction with Pay, Satisfaction with Security and OJS to ROA and EPS and "reveal[ing] some support for reciprocal relationship (for Satisfaction With Pay) and good support for the causal priority of organization financial and market performance appearing to cause employee attitudes (OJS and Satisfaction With Security) [as well]" (Schneider et al., 2003, p. 846). Schneider et al. (2003) concluded by stating "if we were to conclude, as we must on the basis of the present results, that organizational financial and market performance cause at least some facets of employee attitudes" (p. 846).

Wright, Gardner, Moynihan and Allen (2005) examined the relationship between human resource practices and organizational performance as well as the cause of such relationship. They applied a sample of "45 self-contained business units of a large food services corporation with operations in the United States and Canada" (p. 422) in their study. Their aim was to

> Test for the relationships between both HR practice and aggregated affective commitment and multiple performance measures at four different times: past, concurrent, early post, and last post. The performance measures span both operational (productivity, quality, shrinkage, and workers compensation) and financial (expenses and profits) performance measures. (Wright et al., 2005, p. 421)

The lesson learned from this study was that "HR practices are strongly related to future performance but that they are also strongly related to past performance, suggesting caution among both academics and practitioners in making any causal inferences" (Wright et al., 2005, p. 437). These researchers did not dispute that HR practices had an impact on organizational performance; rather, they suggested "more rigorous empirical investigations that can result in more valid causal inferences" (Wright et al., 2005, p. 421) to scholar, practitioner and decision maker.

In their recent tome, Cascio and Boudreau (2008) described the use of their LAMP model ("logic, analytics, measure, and process, four critical components of a measurement system that drives strategic change and organizational effectiveness" p. 8) and other models in measuring the worth of human and organizational effectiveness. Using interview data from many business sources and case scenarios, they explained the utility of LAMP model and other models such as utility model, Monte Carlo analysis, modified Brogden-Cronback-Gleser model specifically for training and many others. Although Cascio and Boudreau (2008) found positive connections on decisions made about human performance to strategic positioning of an organization or a business unit, they felt that "more rigorous, logical, and principles-based frameworks for understanding the connections between human capital and organization success" (p. 2) were needed.

Cascio and Boudreau (2008) explained the frameworks within seven established domains: absenteeism, employee turnover, employee health and welfare, employee attitudes and engagement, work-life issues, external employee sourcing and economic value of employee performance. In each domain, they provided key variables that affected cost and value. Then,

they provided measurement techniques and examples for each domain (Cascio and Boudreau, 2008, pp. 2-3). They said,

> 'Impact' identifies the relationship between improvements in organization and talent performance, and sustainable strategic success. The pivot-point is where differences in performance most affect success. Identifying pivot-points often requires digging deeply into organization - or unit- level strategies to unearth specific details about where and how the organization plans to compete, and about the supporting elements that will be most vital to achieving that competitive position. These insights identify the areas of organization and talent that make the biggest difference in the strategy's success. (Cascio and Boudreau, 2008, p. 195)

The mathematics and statistics calculation they used might be, at times, overwhelming to non academics especially practitioners, but their discussion of job performance and its economic valuation is highly relevant to HPT and to this study.

Open book management (OBM)

OBM is an employee participatory program which encourages employee involvement in gaining corporate financial information and financial goals so that a worker could relate his/her own and workgroup contribution to financial goals of a corporation. Aggarwal and Simkins (2001) stated,

> [OBM] is a way of managing a company demonstrably, without concealment, that motivates all employees to focus on helping the business grow profitably and increasing the return on its human capital. Literally, it means opening a company's financial statements to all employees and providing the education that will enable them to understand how the company makes money and how their actions affect its success and bottom line. (p. 5)

According to them, the two early adopters of OBM were Springfield Remanufacturing Corporation (SRC) in Springfield, Missouri and Wal-Mart. The OBM implementation case study of Manco Inc. cited in their article, competing with 3M and Rubbermaid at the time were managed to increase annual revenue and grow their employee base significantly in 1977. The

master mind of the company's success, Jack Kahl, who was a top executive at Manco Inc. attributed to the use of OBM ideas (Aggarwal & Simkins, 2001). Also, they incorporated a four-step process for a successful implementation of OBM:

1. Disclose and inform employees well on corporate financial standing at all levels
2. Educate employees in basic finance and show them how the company is doing through financials
3. Give employees the power to make decisions
4. Ensure everyone in the company is accountable and responsible for the success of the company (Aggarwal & Simkins, 2001)

In the field of business management, there were empirical references to the implementation of OBM. For example, Davis (1997) cited several successful implementations of OBM in companies: Manco, Phelps County Bank, Mid-size Technical Services, Chesapeake Manufacturing Company and provides number evidence to the growth of revenue and higher return on asset as a result of OBM in these companies. Based on real cases, Stendardi and Tyson (1997) attributed better company financial performances to employee understanding of company finance and their contributions to companies' key financial measurements. They urged financial executives to step out of their control box and be "open-minded about OBM and similar programs that represent unconventional, maverick thinking about the finance function" (p. 39).

No documented studies of HPT practitioners can be found on (1) their knowledge of OBM, (2) the extent usage of financial reporting and data in the analysis and assessment of performance gap and causes, and (3) the type of financial interventions they would prescribe.

Finance for Non-Financial Professionals

In their recent book, Berman and Knight (2008) identified four financial intelligence skills: (1) understanding the foundation, (2) understanding the art, (3) understanding analysis,

and (4) understanding the big picture for their HR readers. The financial knowledge they laid out for HR professionals include: balance sheet (estimates and assumptions), cash (the language of case, profit and how cash connects to everything else), financial ratios (ROI, capital expenditures, and payback methods). Most of all, they explained the art of finance "using limited data to come as close as possible to an accurate description of how well a company is performing" (Berman and Knight, 2008, p. 4). They inferred that knowing, understanding and applying various financial data can enhance HR professionals' ability in improving worker and workgroup performance.

The aim of the current study is to assess the knowledge and skills and use of finance competencies of HPT practitioners. Chapter 2 has provided an overview of related literature that forms the basis for the study. Chapter 3 explains the methodology planned and used for the assessment of the study. The assessment instrument of the current study, an online questionnaire, was devised based on (1) the financial knowledge identified in Berman and Knight's *Financial Intelligence*, (2) Van Tiem, Moseley and Dessinger's *Performance Improvement Interventions* and (3) the adaptation of William Rothwell's Self-Assessment instrument in *ASTD Models for Human Performance Improvement: Roles, Competencies, and Outputs*.

CHAPTER 3 METHODOLOGY

The design, development and implementation of the instrument in this research follow the needs assessment methodology. Kaufman (1986) defined needs assessment as "the process for identifying, documenting, and justifying the gaps between what is and what should be for results- products, outputs (both internal to the organization), and/or outcomes (external consequences) – and placing the gaps (needs) in priority order for closure" (p. 38). Kaufman's needs assessment procedure has helped HPT practitioners and management to:

- Determine gaps between current desired internal and external results
- Determine where in the organization the needs exist,
- Place needs in priority order,
- Select the gaps of highest priority to close,
- Prepare objectives for closing the priority needs,
- Identify causes and origins of the needs,
- Identify and select the best methods and means to close the gaps, and
- Determine the effectiveness and efficiency of the methods and means selected to meet the needs. (Kaufman, 1986, p. 50)

Kaufman, Rojas and Mayer (1993) further explained that needs assessment "is [not only] a very valuable tool for identifying where you are – the current results and consequences – and where you should be – the desired results and consequences … [but also] tends to focus on knowledge, skills and attitude" (p. 4, as cited in Van Tiem et al., 2004).

Altschuld and Kumar (2010) concurred, "Need is the measurable gap between two conditions – 'what is' (the current status or state) and 'what should be' (the desired status or state). The two conditions must be measured and the discrepancy between them determined" (2010, p. 3).

To conduct a needs assessment, gathering data is one of the key steps in assessing the needs. Van Tiem, Moseley and Dessinger (2004) instructed, "data collection techniques may

include reviewing pertinent records to discover present realities and future trends and examining opinions, feelings, and ideas from a variety of sources. The major tools available to the PT practitioner are surveys, interviews, and group processes such as brainstorming, focus groups, critical incident technique, etc." (p. 40). Similarly, Gupta, Sleezer and Russ-Eft (2007) suggested four approaches of conducting needs assessment: knowledge and skills assessment, job and task analysis, competency-based assessment, strategic needs assessment and five common ways of collecting data: interviews, focus groups, surveys, observations, and archival records (p. 25).

Target Population

HPT practitioners who are members and non members of the International Society of Performance Improvement (ISPI) were the target population of this research. ISPI is located in Silver Spring, Maryland, in the United States of America. Local ISPI chapters are located throughout the U.S.A. and in other countries. As stated in its Bylaws, ISPI is a non-profit organization that "is incorporated for the purpose of collecting, developing, and disseminating information concerned with improving human performance [and ISPI is operated] as an educational and scientific organization" (p. 1). In this study, HPT practitioners who are associated with the organization can be either members of the international ISPI, members of a local ISPI or non members. Hence, all subscribers of the ISPI monthly newsletter – *PerformanceXpress* were designated as the sample frame of this research.

In her May 21, 2009 e-mail, Ms. April Davis, the director of ISPI, gave assurance of publishing the Invitation-To-Participate via the *PerformanceXpress* newsletter. In the same e-mail she explained, "*PerformanceXpress* is distributed to approximately 18,000 readers

[subscribers]. This includes members and non-members. Since we [ISPI] do not require chapters to submit their member rosters, we [ISPI] don't know how many local members this list includes. It does include three Board members of each local chapter" (Appendix A). The ISPI local chapters are located in 20 different states in the U.S.A., 10 in Europe and Asia and 3 non-regional chapters.

An Invitation-To-Participate (Appendix B) to the web base survey was submitted and published in the January 2010 *PerformanceXpress* newsletter after the New Year holiday. The subscribers received the invitation along with the newsletter via their e-mails. Those subscribers who were interested in participating in the survey were able to click on the web link in the invitation and start the process of answering the questions in the questionnaire. The questionnaire was online from January 1, 2010 to February 28, 2010.

The subscribers of the *PerformanceXpress* were treated as the sampling frame of this study. Therefore, the sample size was calculated based on the projected responses of the survey. According to the table of Minimum Sample Sizes for Selected Small Populations in Rhea and Parker (2005, p. 150), a sample frame of 20,000 equated to a sample size of 377 which translated to the number of survey responses for this research. This number was calculated based on a margin of error +/- 5% and a 95% Level of Confidence of the population size. Or approximately a minimum sample size of 96 (the number of responses) was based on a margin of error +/- 10% and 90% Level of Confidence of the population size. None of these target responses was attained. Further explanation follows.

Online Instrument

Administering an online questionnaire was the survey method of this research. Two categories of questions were designed to seek answers for (1) What finance skills and knowledge do HPT practitioners possess? and (2) How do HPT practitioners use their finance knowledge and skills in their work? (Appendix C).

The final version of the questionnaire, entitled "A Needs Assessment of Finance Competencies", consisted of (a) 5 demographic questions which included contact information – optional for prize drawing, gender, membership, years of experience in practicing HPT, and job categories, (b) 32 Likert scale questions which included both finance tools, finance systems and finance applications questions, and (c) 3 open ended questions which encouraged participants to elaborate on how they measured human capital, what particular strategies used in linking finance to HPT interventions, and how they felt about speaking the language of finance in their practice (Appendix D). The 32 Likert scale questions sought two levels of responses: Current Level of Expertise (What is) and Future Importance (What is desired).

A prize drawing of five $50.00 VISA gift cards was offered to participants, in the hope of increasing participation. Those participants who wanted to participate in the prize drawing were asked to provide their contact information on their survey responses. Cash reward or prize drawing has been used to entice participants in many online surveys. But, many empirical studies have not shown that incentives would or would not help increase participation. For example, in their recent meta-literature review of factors that would affect response rate on web based survey, Fan and Yan (2009) found, similar to mail survey, that post-survey and the size of

incentives did not impact response rate. But in his 2006 findings, Heerwegh observed that prize drawing did increase response rate; yet, he concluded with these forward thinking thoughts:

> For the time being [during and before 2006], respondents might notice and be pleasantly surprised when a lottery [prize drawing] is present in a Web survey, potentially boosting the response rate. In the future, however, perhaps the absence rather than the presence of a lottery would be noticed and experienced as a deprivation, deteriorating the response rate. (p. 217)

Nevertheless, the researcher decided to incorporate the prize drawing. Because a prize drawing could serve as an incentive, most importantly, the researcher desired to show her gratitude to those who participated.

The questions in the online survey were an adaptation of the questions in Rothwell's (1999) Self-Assessment Inventory in the *ASTD Models for Human Performance*. Most relevant questions in Rothwell's (1999) study were edited and tailored to better fit the focus in this research. The permission to adapt these items was stated in an e-mail from ASTD (Appendix E).

The questionnaire was accessible through Wayne State University College of Education's license via Zoomerang, a web-base survey system. Wright (2005) evaluated Zoomerang and 19 other web based survey systems. He found that Zoomerang, like others, offers clients the ability to create and conduct online surveys by accessing the Zoomerang server via Internet or purchasing the entire Zoomerang software package so that the client can install the software on his/her own computer and computer servers (Wright, 2005). For this study, participants accessed the questionnaire by clicking on the URL, http://education.wayne.edu/financecompetencies.htm, included in the Invitation-to-Participate (Appendix B).

Cheaper and faster access to computing technology has made the web based survey an attractive option for researchers. There is much discussed and many scholarly articles which discuss designing and conducting survey research; only a few, however, discuss web based survey research. In 2001, Solomon stated, "Although the research on Internet-based surveying is limited, findings are beginning to appear in the literature" (para. 11). Similarly, Wright (2005) wrote, "the technology for online research is young and evolving" (para. 3). Having conducted over 10 online surveys and drawing from other researchers' experiences, Wright (2005) discussed several advantages and disadvantages of web base survey as the primary tool to gather data. He said,

> Advantages include access to individuals in distant locations, the ability to reach difficult to contact participants, and the convenience of having automated data collection, which reduces researcher time and effort. Disadvantages of online survey research include uncertainty over the validity of the data and sampling issues, and concerns surrounding the design, implementation, and evaluation of an online survey. (Wright, 2005, para. 3)

Provisions on minimizing those aforementioned disadvantages of online survey were planned and implemented. The following sections described the process of the implementation of conducting the online survey of this research.

After the January 2010 *PerformanceXpress* publication, less than 25 participants completed their survey in the first two weeks. Possible reasons that attributed to low response rates were identified, such as (1) lack of reading the newsletter, (2) timing of the publication after the holidays, (3) placement of the invitation in the newsletter, (4) indifferent to the subject matter of finance, (5) disinterest in self assessment, (6) time needed to complete a questionnaire, (7) viewpoint of connecting finance to HPT, and (8) viewpoint of relating research with practice. Next, the researcher took actions and contacted various individuals in ISPI for help. From January 12, 2010 through February 8, 2010, these follow up actions occurred:

1. Both the director of ISPI in Silver Spring, Maryland and the editor of the *PerformanceXpress* agreed to rerun the Invitation-To-Participate in the February, 2010 *PerformanceXpress* newsletter.

2. The editor of the *PerformanceXpress* agreed to move the placement of the invitation closer to the beginning of the February issue for greater visibility.

3. At the January 2010 meeting of the Michigan Chapter of ISPI, Mr. Jeff McElyea, the president of ISPI Michigan invited the researcher to present and describe the purpose of the survey to the attendees. Paper copies of the invitation were distributed to the attendees at the meeting.

4. The ISPI Michigan Chapter promoted and distributed the invitation via Twitter, LinkedIn and Facebook social networks.

5. Dr. Judy Hale, Director of Certification for ISPI, encouraged and promoted Certified Performance Technologists (CPT) to participate in the survey via her CPT newsletter distribution (Appendix F).

6. Dr. Ann Parkman, the president of The Center for Effective Performance, Inc. distributed and promoted the invitation (Appendix G) through her distribution list.

7. Various individual ISPI members in Michigan, Idaho and Florida helped distribute and promote the survey.

At closing, Zoomerang reported that the online survey received 330 visits. From these visits, 89 complete and 14 incomplete surveys were obtained. After screening the raw data, there were 67 usable cases for quantitative analysis. Per an online sample size calculator,

http://www.raosoft.com/samplesize.html, a sample size of 67 equated to a 95% Confidence Level and +/- 11.95% margin of error to the population. . Sixty two participants provided their contact information which included name, telephone number and e-mail address. Although it is indeed a small sample, the researcher was pleased with the quality of the responses, the caliber of the participants and the geographic spread of participants who are from all regions in the United States of America, Canada and Mexico.

Drawing of the prizes will be conducted at the completion of this dissertation by a non bias individual. Each of the five randomly drawn participants, who provided their contact information, will receive a $50.00 VISA gift card.

Reliability

In this study, two reliability steps were followed:

1. Five HPT practitioners were contacted by the researcher and were invited to participate in the pilot of the survey via Zoomerang. Fink (2006) said, “A pilot test helps you design a reliable survey. When pilot testing, anticipate the actual circumstances in which the survey will be conducted, and make plans to handle them. Choose respondents similar to the ones who will eventually complete the survey, and enlist as many people as you can. For reliability, focus on the clarity of the questions and the general format of the survey. ” (p. 31). Each participant was encouraged to report on any difficulties on accessing the survey via the Internet, reading and clarifying questions.

   Each of these practitioners has over 15 years of business and performance improvement experiences. Three of these practitioners not only have worked or are working for business corporations, but they also own their own small businesses. Individually, each

person reported that he/she spent over two to three hours on the survey. Two individuals provided oral feedback and three provided written comments and feedback on clarity, wording and phrasing of questions.

Changes were made to those questions based on their suggestions. Although changes were made, the researcher was able to maintain the originality of the questions adapted from Rothwell's questionnaire.

2. A reliability statistical step was conducted when surveys were administered and data collection was completed. There were 10 potential dependent variables. All of them were created by a composite of survey questions. Cronbach's alpha assessed the internal consistency on the composite survey questions. Because Cronbach's alpha statistical engine is a correlation, it attenuates due to the small number of items in the composite; therefore, Cronbach's alpha was projected to a full scale reliability estimate of items n=38 Current State and n=38 Future Importance. Results of Cronbach's alpha are reported in Chapter 4. As noted below in the validity section, a factor analysis was conducted. The actual dependent variables that emerged could be different from the 10 original dependent variables; however, the researcher opted to maintain the original 10 dependent variables for this study. The factor analysis results are reported in Chapter 4.

Validity

As stated earlier, the survey questions of the current study were an adaptation of the questions in Rothwell's Self-Assessment Inventory in the *ASTD Models for Human Performance*. Close to 15% of the original questions were changed to better fit the focus of this study. Azar (1999) explained,

> Content validity, which is built on evidence that a test measures the content it claims to measure – that a test of U.S. history contains the content experts in U.S. history would agree is appropriate for the level being tested… validity itself … is the degree to which the accumulated evidence supports the specific interpretations that test developers, or users, claim they can make using a test's score (para. 19 & 21).

Similarly, Fink (2006) noted, "Content validity is usually established by referring to theories about personality, emotions, and behavior and by asking experts whether the items are representative samples of the attitudes and traits you want to survey … Construct validity is established experimentally by trying the survey on people whom the experts say do and do not exhibit the behavior associated with the construct" (p. 39). To validate both the content and construct of survey questions for this study, three individuals who are practicing HPTs and are knowledgeable in finance examined the content and clarity of the questions. These three experts possess many of the expert characteristics explained and cited in Witucki's (2006) doctoral dissertation as follows;

> [Expert is] an individual with extensive experience and fluency in a particular field. Experts are frequently consulted by others in their field for advice or guidance, have a large amount of knowledge applicable to the field, and perform many tasks automatically, with little apparent effort... An expert may or may not have an advanced degree in his field, but the vast majority of studies agree that an expert has approximately ten years' experience in the field. An expert is an individual performing at least two standard deviations above the mean level of the population. .. An individual recognized by peers as being an exceptional performer, (Stough & Palmer, 2001) who has skills and knowledge that provide the ability to perform far above the norm. (Harmon & King, 1985). Typically, a practitioner with at least ten years' experience in a field (p. 9).

The three individuals shared these qualifications: (1) possess a master's degree in business, (2) practice in HPT and (3) active in a local and/or international ISPI organization. Two individuals currently own their consulting firms in performance improvement. The third individual has over 38 years of accounting and finance working experience.

The original plan was to ask the individuals to score each question in the survey. (Appendix H) Then a statistical procedure, Kappa, would be used to calculate and show a measure of agreement from these individual ratings. The three individuals decided not to use the score sheet provided. Instead, each individual provided verbal and written feedback to each question. Each individual spent approximately 2 to 3 hours reviewing and validating the questions. Based on feedback, changes were made to unclear questions. The revised and final version of the questionnaire (cf. Appendix B) was uploaded to Zoomerang.

Data Analysis

Multiple statistical software and procedures were used in obtaining various scores for the quantitative analysis of this study. Stata Data Analysis and Statistical Software version10 was used to run the Dependent Hotelling's T^2 procedure which reported on the total score of current and future values of the 10 dependent variables. Then, IBM Statistical Package for the Social Sciences (SPSS), a predictive analytics software, version 18 was used to run the T-test on Current State (What-is) and Future Importance (What-is-desired) for each dependent variable. The statistical hypothesis testing for the Dependent Hotelling's T^2 is expressed as follows:

Dependent Hotelling T^2

$$H_0: \boldsymbol{\mu}_C = \boldsymbol{\mu}_F$$

$$H_1: \boldsymbol{\mu}_C \neq \boldsymbol{\mu}_F$$

Hair, Black, Babin, Anderson and Tatham (2006) explained,

> Hotelling's T^2 [is] a specialized form of MANOVA and a direct extension of the univariate *t* test … Hotelling's T^2 provides a statistical test of the variate formed from the dependent variables, which produces the greatest group difference. It also addresses the

> problem of inflating the Type I error rate that arises when making a series of *t* tests of group means on several dependent measures. It controls the inflation of the Type I error rate by providing a single overall test of group differences across all dependent variables at a specified α level (p. 393).

Similarly, Tabachnick and Fidell (2007) stated the use of Hotelling's T^2 is "when the IV has only two groups and there are several DVs… It is not legitimate to use separate *t* tests for each DV to look for differences between groups because that inflates Type I error due to unnecessary multiple significance tests with (likely) correlated DVs" (p.21). Table 1 lists the dependent variables, the independent variables, the scale of measurement and the statistical procedure for Dependent Hotelling's T^2.

Table 1

Scale of Measurement of Potential DVs and IVs and Statistical Procedure

Potential Dependent Variables (Composite/total score of factors)	Independent Variables (Ordinal)	Statistical Procedure
1. Terms 2. Justification 3. Analysis 4. Link 5. Impact 6. Communication 7. Usage 8. Synthesis 9. Strategy 10. Acquisition	Current State (What is) Future Importance (What is desired)	Dependent Hotelling's T^2

Further, SPSS version 18 was used to run MANCOVA on testing job categories by comparing Current State and Future Importance scores. The statistical hypothesis testing for MANCOVA is expressed as follows:

One Way MANCOVA

$$H_0: \quad \mu_C = \mu_F$$

$$H_1: \quad \mu_C \neq \mu_F$$

Hair, Black, Babin, Anderson and Tatham (2006) explained,

> ANOVA is termed a univariate procedure because we use it to assess group differences on a single metric dependent variable…When used with ANOVA, the analysis is termed analysis of covariance (ANCOVA) and the simple extension of the principles of ANCOVA to multivariate (multiple dependent variables) analysis is termed MANCOVA (p. 383 & p. 406)

Table 2 lists the dependent variables, the independent variables, the scale of measurement and the statistical procedure for MANCOVA.

Table 2

Scale of Measurement of Potential DVs, IVs, Covariate and Statistical Procedure

Potential Dependent Variables (Composite/total score of factors)	Independent Variables (Nominal)	Covariate (Composite/total score of factors)	Statistical Procedure
Future Importance (What is desired) of each of the following DV: 1. Terms 2. Justification 3. Analysis 4. Link 5. Impact 6. Communication 7. Usage 8. Synthesis 9. Strategy 10. Acquisition	Job Categories: • Performance Consultants • Human Resource Managers/Directors • Organizational Development Professionals • Sales Professionals • Trainers/Instructors • Instructional Designers • Training Managers • Educators (academics) • Project Managers • Marketing Professionals • Evaluation Specialists • E-Learning Management Professionals • Other	Current State (What is)	One way MANCOVA

Table 3, applicable to both the Dependent Hotelling's T^2 and MANCOVA procedures in this study, lists the research questions, the survey questions, and their labels of dependent variables.

Table 3

Cross Reference of Research and Survey Questions and Dependent Variables

Research Questions	Survey Questions	Dependent Variables
1.To what extent is an HPT practitioner knowledgeable of financial statements and terms Balance sheet – estimates and assumptions, liabilities and equity, expenses vs. capital, return on assets, return on investment, earnings per share Cash flow – items to calculate cash, cash ratios, accounts receivable aging, Ratios – profitability, leverage, liquidity and efficiency ratios	6,7	Terms
2. To what extent does an HPT practitioner use financial data to justify expenditures in proposed or prescribed performance improvement interventions?	24,28	Justification
3. To what extent does an HPT practitioner analyze financial data regarding performance improvement interventions?	9,27, 29	Analysis
4. To what extent does an HPT practitioner translate financial data to performance improvement interventions?	25, 30,31	Link
5. How does finance knowledge apply in the work of the HPT practitioner?	8,17,11	Impact
6. What strategies does the HPT practitioner use to gather financial data in an organization?	10,18	Communication
7. How does the HPT practitioner analyze financial data?	12,13	Usage
8. How does the HPT practitioner use the synthesized financial data?	14,19,32	Synthesis
9. What strategies does the HPT practitioner use to communicate financial data?	21,22,23	Strategies
10. How does an HPT practitioner gain financial knowledge and skills?	15,16, 20,26	Acquisition

Prior to running the Dependent Hotelling's T^2 and MANCOVA procedures, factor analysis was conducted. The composite score (total score) of factor analysis was subjected to reliability tests. The actual dependent variables could emerge different from the 10 original dependent variables; however, the researcher opted to maintain the original 10 dependent variables for this study. The factor analysis results and explanation are reported in Chapter 4.

Although there are different points of views on the scales of measurement, this research adopts the following interpretation:

> It suffices to note that many measures are sums of item responses, such as conventionally scored multiple-choice, true-false, and Likert scale items. Data from individual items are clearly ordinal. However, the total score is usually treated as interval, as when the arithmetic mean score, which assumes equality of intervals, is computed. Those who perform such operations thus implicitly use a scaling model to convert data from a lower (ordinal) to a higher (interval) level of measurement when they sum over items to obtain total score (Nunnally and Bernstein, 1994, p. 16).

The composite (total) score of factors not the sum of *items* is used in this research.

Summary

This chapter described (1) the design, development and implementation of needs assessment, a research methodology used in this study, (2) the target population, defined sample frame and sample size obtained, (3) the design, development, and implementation of the online instrument, (4) the implementation of content and statistical reliability tests (5) the validity test conducted, and (6) the statistical procedures applied for analyzing the data. Both statistical results of the 32 Likert scale questions and the analysis of feedback of the three open ended questions are presented in Chapter 4.

CHAPTER 4 RESULTS

The focus of this research is to answer two overarching questions, (1) What finance knowledge do HPT practitioners possess? and (2) How do HPT practitioners use their finance knowledge and skills in their work? An online survey was implemented to answer the research questions. Participants were invited through an Invitation To Participate which was published twice in the ISPI *PerformanceXpress* newsletter (Appendix B). Each participant was asked to answer 5 demographic questions, 32 Likert scale questions (Current State and Future Importance), and 3 open-ended questions. Appendix I shows the matrix of survey questions, 10 research questions and the two overarching questions. The self-report online questionnaire sought two levels of answers, Current State and Future Importance, from each participant for each question. Both statistical and descriptive results are presented in the following sections.

Participant Profile

Table 4 shows the number of male and female participants in the survey. Sixty nine percent of the participants were female and thirty one percent were male. Gender was collected as informational data for this study.

Table 4

Participant Profile - Gender

Gender	Responses	Percentage
Female	46	69%
Male	21	31%
Total	67	100%

Table 5 shows the job categories of participants in the survey. Two most frequent job categories were Instructional Designer and Performance Consultant.

Table 5

Participant Profile – Job Categories

Job Category	Responses	Percentage
Instructional Designer	17	25.37%
Performance Consultant	15	22.39%
Project Manager	7	10.45%
Training Manager	7	10.45%
Training Instructor	4	5.97%
Educator	4	5.97%
Human Resource Manager	3	4.48%
Organizational Development Professional	1	1.49%
Others	9	13.43%
Total	67	100%

Years of Experience in HPT data were collected for informational purpose. Over 73% of the participants reported that they have more than five years of practicing experience in HPT. Table 6 shows the summary of the number of years of experience in groups by range of years.

Table 6

Participant Profile – Years of Experience in HPT

Years of Experience in HPT	Responses	Percentage
0	2	2.99%
1-4	15	22.39%
5-9	10	14.93%
10-25	34	50.75%
26-30+	5	7.46%
Missing	1	1.49%
Total	67	100%

The Invitation To Participate in the online survey was published twice in the *PerformanceXpress* newsletter, which has approximately 18,000 subscribers including ISPI members and non-members (cf. Appendix A and B). Table 7 shows the number of participants and their membership organizations.

Table 7

Participant Profile - Membership

Membership	Responses	Percentage
International ISPI	27	40.30%
International ISPI and Local ISPI	11	16.42%
Local ISPI	10	14.93%
Non Member	11	16.42%
Other organizations: American Society for Training and Development (ASTD), Society for Human Resource Management (SHRM) , Canadian Society for Training and Development (CSTD), Michigan Association for Computer Users in Learning (MACUL)	8	11.94%
Total	67	100%

As an incentive to participate in this research five $50.00 VISA gift cards were offered. Those who wished to participate in the prize drawing provided their contact information. To protect their privacy, only name, e-mail and telephone number were collected.

Twenty three (plus one missing) geographic locations of the participants were identified by the area codes of their telephone numbers. The locations of participants extended to 21 out of 50 states in the United States mainland, Canada and Mexico. Table 8 shows the geographic locations of the participants.

Table 8

Participant Profile – The Geographic Locations of The Participants

Geographic	Participants	Geographic	Participants
Arizona	1	Michigan	19
Atlanta	3	New Hampshire	1
California	4	New Jersey	1
Canada	3	New York	2
Florida	4	North Carolina	1
Idaho	2	Ohio	1
Illinois	2	Oregon	1
Indiana	2	Pennsylvania	1
Iowa	2	Tennessee	1
Kansas	1	Texas	3
Minnesota	2	Virginia	3
Mexico	1	Missing	1

Instrument Reliability

An estimate of the 38 item instrument reliability was obtained by applying the reliability statistical procedure in the IBM Statistical Package for the Social Sciences (SPSS) version 18. The Cronbach's alpha scores ranging from .75 to .95 for Current State and .60 to .94 for Future Importance of the 10 DVs were obtained. Table 9 shows Cronbach's alpha scores of Current State and Future Importance and number of items of each dependent variable.

Table 9

Reliability Test of Dependent Variables (N=67)

Dependent Variables	Cronbach's Alpha		
	# of Items	Current State	Future Importance
Terms	13	.95	.94
Justification	2	.88	.77
Analysis	3	.89	.83
Link	3	.88	.90
Impact	3	.75	.60
Communication	2	.82	.81
Usage	2	.90	.82
Synthesis	3	.84	.80
Strategy	3	.90	.87
Acquisition	4	.89	.86

Factor Analysis

Principal factors extraction with Varimax rotation was performed by using SPSS version 18 on 38 items for the sample of 67 in this study. Principal components extraction was used to extract estimated factor components. The Kaiser-Meyer-Olkin Measure of Adequacy score of .95 signified a satisfactory index for a factor analysis to proceed. Bartlett's Test of Sphericity score of χ^2 (703) = 6205.66, $\rho < .01$ indicated that the correlation matrix was not an identity matrix.

Three components were extracted. The cumulative variance of 79.53% was explained. With a cutoff of .30 for inclusion of a variable in interpretation of a factor, all of the variables were loaded in 3 factor solutions.

Table 10 shows the first Component that contained the factor loadings from .869 to .533, which suggested that the corresponding survey questions are suited for answering the second overarching question of this study, "How do HPT practitioners use their finance knowledge and skills in their work?"

Table 10

Factor Loadings - Component 1

Items	Question Statements	Correlations	Communalities
28	Include financial measurement in selected HPT interventions that address the root cause(s) of performance gaps rather than symptoms or side effects.	.869	.859
24	Examine effects of prescribed human performance interventions on the identified financial goals.	.866	.848

29	Examine financial effects of multiple HPT interventions on parts of an organization, as well as the effects on the worker, workgroup and organization.	.863	.856
17	Link financial data and/or findings to key business issues during the implementation of an HPT intervention.	.862	.838
27	Examine financial measurement and data that affect work environment related issues or characteristics.	.832	.819
22	Exercise effective interpersonal influence and work effectively with others to achieve financial goals.	.827	.782
30	Ensure that business goals are converted effectively into actions to close existing or pending performance goals and measurements.	.822	.813
32	Use financial measurements and findings to assess how well the results of an HPT intervention match intentions.	.820	.809
20	Link human performance improvement interventions to worker, workgroup and organizational financial goals.	.814	.777
25	Incorporate financial measurement in prescribed human performance improvement interventions to close existing or anticipated performance gaps.	.812	.858
16	Forecast and analyze the effects of interventions and their consequences with financial measurements and data.	.801	.821
23	Identify financial inputs, throughputs, and outputs of a subsystem, system, or supra system and apply that information to improve desired financial goals through human performance.	.797	.829
19	Feed relevant and pertinent financial information back to stakeholders clearly, specifically, and on a timely basis to the affected worker or workgroup.	.795	.847
21	Know how to lead or influence others positively using financial data to achieve desired financial results.	.793	.813

13	Compare actual and ideal financial goals in order to identify overall performance gaps or opportunities.	.769	.818
31	Help workers, work team and management to interpret and link financial data to their outputs.	.765	.806
26	Gather pertinent financial information to stimulate insight in individuals and groups through use of interviews and other probing methods.	.757	.806
15	Find useful financial data from the results of performance analysis to help performers, performers' managers, process owners, and other stakeholders to do the same.	.743	.832
9	Detect performance gaps by analyzing financial data in standard internal and external financial reports.	.726	.804
14	Identify finance knowledge and skills required of teams, jobs, tasks, roles, and work.	.698	.745
18	Understand the interdependency of budgets or shared financial responsibility of worker and workgroups in an organization.	.686	.786
12	Understand the financial results that stakeholders desire from a process by providing insight into how efficiently and effectively those financial results can be achieved.	.682	.781
11	Build financial ownership or improve the financial knowledge of individuals, groups, and other stakeholders.	.607	.727
8	Use existing or new technology and different types of software such as SAP, Excel, PeopleSoft and/or proprietary financial systems to obtain relevant and pertinent financial data and to apply financial data that link to performance issues.	.533	.591

10	Distinguish between financial activities (i.e. accounts payable, asset acquisition) and financial results (i.e. revenue gains, internal accounting transactions) by recognizing their financial implications, outcomes, and consequences.	.566	.737

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization

Table 11 shows the second component that included the factor loadings from .842 to .756, which suggested that the corresponding questions are suited for answering the first overarching question of this study, "What finance knowledge do HPT practitioners possess?", specifically on their knowledge and skills of finance tools.

Table 11

Factor Loadings - Component 2

Items	Question Statements	Correlations	Communalities
6.8	Return On Equity (ROE is a measure of operating efficiency; concerns mostly with the return on a company's investment).	.842	.871
6.6	Debt to Equity Ratio (This ratio tells how much debt a company has for every dollar of shareholders' equity, aka owners' equity).	.840	.855
6.9	Net Present Value (A more complex method of calculating paybacks for a company's upfront cash such as expenditure, investment or loan).	.839	.818
6.7	Return On Asset (ROA is a measure of operating efficiency, of how well a company has used the assets under its control to generate income).	.837	.844
6.5	Cash Flow Statement (An amount of cash that is available to meet payment of debts, salary and other expenses).	.808	.771

6.2	Earnings Per Common Share (EPS is a financial indicator of a company that Wall Street watches closely. If a Wall Street EPS expectation of a company is not met, the share price is likely to drop).	.794	.745
6.4	Income Statement (A financial report includes the revenues and expenses of a business as of a period of time, i.e. a month or a year).	.791	.734
6.3	Inventory Turn Ratio (This measure indicates management efficiency in managing its inventory).	.790	.740
6.1	Balance Sheet (A statement of a business or institution that lists the assets, debts, and owner's investment as of specified date).	.756	.760

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization

Table 12 shows the third component that included the factor loadings from .842 to .756, suggesting that the corresponding questions are suited for answering the first overarching question of this study, "What finance knowledge do HPT practitioners possess?", specifically on their knowledge and skills of finance systems.

Table 12

Factor Loadings - Component 3

Items	Question Statements	Correlations	Communalities
7.2	Activity Based Accounting (ABM uses activity-based cost information and performance measurement to influence management action).	.768	.833
7.1	Open Book Management (Employee participation in the running and managing the financials of the company is the crux of OBM).	.748	.729

7.4	Balanced Score Card (By focusing not only on financial outcomes but also on the human issues, the balanced scorecard helps to provide a more comprehensive view of a business).	.733	.738
7.3	Total Cost of Ownership (This measure establishes concrete links between qualitative performance efforts and bottom-line results, i.e. Six Sigma).	.717	.786

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization

Although a few survey questions could be combined, eliminated and/or distributed differently among the 3 factor components, after careful consideration, the researcher decided to maintain all the variables as planned and proceeded with the Gap Analysis. This decision was influenced mostly by (1) the small sample size, (2) the high consistency and reliability of the sample responses, and (3) the suggested factor loadings in each component which were congruent with the overarching questions of this research.

Gap Analysis

Dependent Hotelling's T^2 was performed using Stata Data Analysis and Statistical (Stata) software version 10, on the ten dependent variables: Terms, Justification, Analysis, Link, Impact, Communication, Usage, Synthesis, Strategy, and Acquisition. The Independent variable was Current State versus Future Importance. The goal was to determine the mean difference of Current State and Future Importance. $T^2 = 130.714$; $F\ (9, 58) = 12.76$, $p < .001$ confirmed and supported the significance of difference between Current State and Future Importance collectively.

Follow up *t*-tests were used to examine the mean difference for each dependent variable. Table 13 contains a composite table that shows the individual *t*-test results of the ten dependent variables. Reports of the individual *t*-test results of each research question follow.

Table 13

The t-test Results of The Ten Dependent Variables

	N	Mean		SD		*t*-value	Sig.
		Current	Future	Current	Future		
Terms	67	26.43	35.70	8.73	9.07	-7.46	0.00
Justification	67	4.54	6.82	1.57	1.34	-10.91	0.00
Analysis	67	6.37	9.63	2.31	2.06	-9.77	0.00
Link	67	6.99	10.04	2.30	2.06	-9.66	0.00
Impact	67	6.18	9.45	1.98	1.88	-11.41	0.00
Communication	67	4.48	6.27	1.63	1.51	-7.46	0.00
Usage	67	4.42	6.67	1.75	1.28	-9.47	0.00
Synthesis	67	6.85	9.78	2.24	1.94	-9.08	0.00
Strategy	67	7.01	9.73	2.38	1.98	-8.52	0.00
Acquisition	67	9.22	13.39	2.91	2.40	-9.76	0.00

Research Question 1, To what extent is an HPT practitioner knowledgeable of financial statements and terms, i.e. Balance sheet - estimates and assumptions, liabilities and equity, expenses vs. capital, return on assets, return on investment, earnings per share; Cash flow – items to calculate cash, cash ratios, accounts receivable aging; Ratios – profitability, leverage, liquidity and efficiency ratios.

There was statistical difference on the DV Terms (t=-7.46, df=66, p< .01). The mean difference of Current State and Future Importance was -9.27 which implied that the participants recognized the gap in their Current State and Future Importance of their knowledge and skills in finance tools and financial systems such as Open Book Management, Activity Based Accounting, Total Cost of Ownership and Balanced Score Card. Table 14 shows the mean, standard deviation and *t*-value of dependent variable Terms.

Table 14

The t-test Results of Dependent Variable Terms

	N	Mean		SD		*t*-value	Sig.
		Current	Future	Current	Future		
Terms	67	26.43	35.70	8.73	9.07	-7.46	0.00

Research Question 2, To what extent does an HPT practitioner use financial data to justify expenditures in proposed or prescribed performance improvement interventions?

There was statistical difference on the DV Justification (t=-10.91, df=66, p< .01). The mean difference of Current State and Future Importance was -2.28 which implied that the participants recognized the gap of their Current State and Future Importance in their use of

financial data to justify expenditures by examining the effect of prescribed HPT interventions and/or include financial measurements in selected HPT interventions. Table 15 shows the mean, standard deviation and *t*-value of dependent variable Justification.

Table 15

The t-test Results of Dependent Variable Justification

	N	Mean		SD		*t*-value	Sig.
		Current	Future	Current	Future		
Justification	67	4.54	6.82	1.57	1.34	-10.91	0.00

Research Question 3, To what extent does an HPT practitioner analyze financial data regarding performance improvement interventions?

There was statistical difference on the DV Analysis (t=-9.77, df=66, p< .01). The mean difference of Current State and Future Importance was -3.25 which implied that the participants recognized the gap of their Current State and Future Importance of their use of financial data to analyze performance gaps by examining available financial reports, financial measurement and HPT interventions that affect work, workers and workgroups. Table 16 shows the mean, standard deviation and *t*-value of dependent variable Analysis.

Table 16

The t-test Results of Dependent Variable Analysis

	N	Mean		SD		*t*-value	Sig.
		Current	Future	Current	Future		
Analysis	67	6.37	9.63	2.31	2.06	-9.77	0.00

Research Question 4, To what extent does an HPT practitioner translate financial data to performance improvement interventions?

There was statistical difference on the DV Link (t=-9.66, df=66, p< .01). The mean difference of Current State and Future Importance was -3.06 which implied that the participants recognized the gap of their Current State and Future Importance in helping clients interpret and link financial data to outputs and/or incorporate financial measurements in prescribed HPT interventions and/or convert business goals and actions to financial measurements. Table 17 shows the mean, standard deviation and t-value of dependent variable Link.

Table 17

The t-test Results of Dependent Variable Link

	N	Mean		SD		*t*-value	Sig.
		Current	Future	Current	Future		
Link	67	6.99	10.04	2.30	2.06	-9.66	0.00

Research Question 5, How does finance knowledge apply in the work of the HPT practitioner?

There was statistical difference on the DV Impact (t=-11.41, df=66, p< .01). The mean difference of Current State and Future Importance was -3.27 which implied that the participants recognized the gap of their Current State and Future Importance of applying their finance knowledge by impacting their clients through ways of linking financial data and business issues during HPT interventions, finding relevant financial data that link to performance issues and building financial knowledge of their clients. Table 18 shows the mean, standard deviation and *t*-value of dependent variable Impact.

Table 18

The t-test Results of Dependent Variable Impact

	N	Mean		SD		*t*-value	Sig.
		Current	Future	Current	Future		
Impact	67	6.18	9.45	1.98	1.88	-11.41	0.00

Research Question 6, What strategies do HPT practitioners use to gather financial data in an organization?

There was statistical difference on the DV Communication (t=-7.46, df=66, p< .01). The mean difference of Current State and Future Importance was -1.79 which implied that the participants recognized the gap of their Current State and Future Importance to gather and communicate financial data that distinguish between financial activities (i.e. accounts payable,

asset acquisition) and financial results (i.e. revenue gains, internal accounting transactions) by recognizing their financial implications, outcomes, and consequences to worker, workgroup and organization. Table 19 shows the mean, standard deviation and *t*-value of dependent variable Communication.

Table 19

The t-test Results of Dependent Variables Communication

	N	Mean		SD		*t*-value	Sig.
		Current	Future	Current	Future		
Communication	67	4.48	6.27	1.63	1.51	-7.46	0.00

Research Question 7, How does the HPT practitioner analyze financial data?

There was statistical difference on the DV Usage (t=-9.47, df=66, p< .01). The mean difference of Current State and Future Importance was -2.25 which implied that the participants recognized the gap of their Current State and Future Importance in analyzing financial data that would provide insights on desired and actual financial goals through performance improvement. Table 20 shows the mean, standard deviation and *t*-value of dependent variable Usage.

Table 20

The t-test Results of Dependent Variable Usage

	N	Mean		SD		*t*-value	Sig.
		Current	Future	Current	Future		
Usage	67	4.42	6.67	1.75	1.28	-9.47	0.00

Research Question 8, How do HPT practitioners use synthesized financial data?

There was statistical difference on the DV Synthesis (t=-9.08, df=66, p< .01). The mean difference of Current State and Future Importance was -2.93 which implied that the participants recognized the gap of their Current State and Future Importance of synthesizing and comparing financial information and measurements of an HPT intervention to clients' intentions. Table 21 shows the mean, standard deviation and *t*-value of dependent variable Synthesis.

Table 21

The t-test Results of Dependent Variable Synthesis

	N	Mean		SD		*t*-value	Sig.
		Current	Future	Current	Future		
Synthesis	67	6.85	9.78	2.24	1.94	-9.08	0.00

Research Question 9, What strategies do HPT practitioners use to communicate financial data?

There was statistical difference on the DV Strategy (t=-8.52, df=66, p< .01). The mean difference of Current State and Future Importance was -2.72 which implied that the participants recognized the gap of their Current State and Future Importance in strategies leading and influencing others and in identifying inputs, throughputs and outputs of organizations with financial data. Table 22 shows the mean, standard deviation and *t*-value of dependent variable Strategy.

Table 22

The t-test Results of Dependent Variable Strategy

	N	Mean		SD		*t*-value	Sig.
		Current	Future	Current	Future		
Strategy	67	7.01	9.73	2.38	1.98	-8.52	0.00

Research Question 10, How does an HPT practitioner gain financial knowledge and skills?

There was statistical difference on the DV Analysis (t=-9.76, df=66, p< .01). The mean difference of Current State and Future Importance was -4.16 which implied that the participants recognized the gap of their Current State and Future Importance in gaining financial knowledge and skills through the acquisition of (1) financial data from the results based on performance analysis, (2) the forecast and analysis of the effects of interventions and consequences, (3) linkage of HPT interventions to worker, work and workgroup, and (4) insights from workers and

workgroups. Table 23 shows the mean, standard deviation and *t*-value of dependent variable Acquisition.

Table 23

The t-test Results of Dependent Variable Acquisition

	N	Mean		SD		*t*-value	Sig.
		Current	Future	Current	Future		
Acquisition	67	9.22	13.39	2.91	2.40	-9.76	0.00

Effect of Job Categories to Current State and Future Importance Scores

A MANCOVA was conducted on the Future Importance score for the 10 DVs using Current State score as the covariates. In order to improve the statistical power due to a very small sample size of 67, several job categories were combined before conducting the procedure. Table 24 shows the before and after job categories.

Table 24

Job Categories Combined Before and After

Before	N	After	N
Instructional Designer	17	Instructional Designer	17
Performance Consultant	15	Performance Consultant	15
Trainer/Instructor	4	Training Personnel	11
Training Manager	7		
Human Resource Manager/Director	3	Human Resource Manager/Organizational Development	4

Organizational Development Professional	1		
Educator (Academic)	4	Educator (Academic)	4
Project Manager	7	Other Management	16
Other Management	9		

Using Current State as the covariate, MANCOVA was used to test Job Categories (Independent Variables) with the 10 Future Importance dependent variables. There was no statistical difference between job categories found with controlling DVs (F= .90(50,230), p > .05). For example, the two job categories of most interest to this study were Instructional Designer and Performance Consultant. As shown in Table 16, the mean score difference between these two jobs were almost identical, indicated small effect size. Since there was no statistical significance of MANCOVA found, no follow up test was conducted.

Table 25 shows MANCOVA scores of controlling Current State covariate on testing Job Categories by Future Importance dependent variables.

Table 25

Control Current Mean Scores to Test Job Categories by Future Mean Scores of Dependent Variables

	Terms		Justification		Analysis		Link		Impact	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Instructional Designer	34.24	9.54	7.12	.86	9.88	1.32	10.35	1.54	9.59	1.46
Performance Consultant	34.0	6.05	7.07	.96	9.73	2.02	10.00	2.04	9.33	2.16
Training Personnel	39.18	6.55	6.64	1.57	10.09	1.70	10.27	1.19	9.73	1.35
HRM/OD	32.50	8.19	6.25	1.50	8.75	2.36	9.00	2.94	10.00	1.41
Academia	39.00	16.12	7.00	2.00	10.25	3.50	10.25	3.50	9.50	3.79
Other Management	36.44	10.78	6.50	1.71	9.00	2.56	9.81	2.59	9.06	2.02
	Communication		Usage		Synthesis		Strategy		Acquisition	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Instructional Designer	6.06	1.14	6.82	1.13	10.24	1.39	10.18	1.55	13.59	1.97
Performance Consultant	6.20	1.61	6.4	1.50	9.80	1.97	9.4	2.16	14.13	2.13
Training Personnel	7.18	.98	7.00	1.00	9.36	1.96	9.64	1.57	13.36	2.06
HRM/OD	5.75	1.50	6.50	1.00	9.75	1.71	10.00	2.16	12.25	1.71
Academia	6.50	3.00	7.00	2.00	10.00	3.37	10.00	4.00	13.50	4.36
Other Management	6.00	1.59	6.50	1.37	9.50	2.22	9.5	2.03	12.75	2.89

Participant Feedback on Open-Ended Questions

Each participant also answered 3 open ended questions besides the 32 Likert scale survey questions. Questions were reviewed and examined with their demographic information such as gender, years of experience, membership, and job categories. Using the database feature in Microsoft Excel, participants' demographic information and feedback were compared and analyzed by individual participant and as groups. The researcher was looking for possible commonalities, themes and patterns of feedback. After examining the four demographic data questions with feedback data, Job Categories emerged as a meaningful descriptor to participants' feedback.

One overall noticeable pattern and theme emerged from the responses to the 3 open-ended questions. Respondents who held higher ranking job positions greatly emphasized the need of (1) linking performance to corporate finance, (2) measuring human capital, and (3) speaking the language of finance. Typical titles of the job positions were CEO of an auto parts producer, Director of E&T, Owner of a customer training development and performance support firm, VP of Product Development, Director of Human Resources, among others.

Due to the small sample size and that many of the job categories had received single digit responses, only the most meaningful patterns or themes of job categories which emerged are reported in the following sections. A listing of feedback responses of all job categories from participants who provided feedback was compiled and shown by each question in separate tables. The listings provide readers with a complete scope and details of answers to these open ended questions.

On the question "Do you measure human capital in your workplace? If you do, what measurement and method do you use? Human capital = tacit knowledge and institutional knowledge." Two job categories showed meaningful commonalities in their feedback. Ten participants in job category Instructional Designer answered "no" and two Instructional Designers gave affirmative answers. Five participants in job category Performance Improvement Consultant answered "no" and six Performance Improvement consultants indicated that they are measuring human capital in their workplace. Table 26 shows detailed answers of each participant.

Table 26

Participants' Feedback on Question: Do you measure human capital in your workplace? If you do, what measurement and method do you us? Human capital = tacit knowledge and institutional knowledge.

Job Category	Feedback
CEO- Automotive Parts Producer	Skills and Knowledge assessment tools
Director, E&T organization	Yes - we strive to evaluate the impact and ROI of our learning interventions to our operations/mission.
Educator (Academic)	No
Educator (Academic)	I am an academic and guide dissertations as a mentor, chair, or committee member. Human capital measurement has not been part of my thinking to this point.
Educator (Academic)	Don't currently measure
Educator (Academic)	We link all Inputs, Processes, Products, and Outputs to Outcomes. Mega/societal value added. This variable seems to be missing in your criteria.
Executive Coach	N/A
HR/OD Consultant	No
Human Resource Manager/Director	None is currently in practice
Human Resource Manager/Director	No

Human Resource Manager/Director	We have a number of standard measures, including turnover ratios (broken down by demographics), performance ratings, compensation related measures, spans of control, number of months in role, etc. We often compare the relationships among these measures (e.g. how total cash compensation compared to midpoint for the job is/isn't related to turnover).
Instructional Designer	No, we do not measure human capital
Instructional Designer	No
Instructional Designer	Annual required training and assessments; annual company-based assessment
Instructional Designer	Not in this department at this level. My responses are based an a possible situation or position.
Instructional Designer	It is not being measured at a personal level. Patents are still the key institutional measurement of knowledge capital.
Instructional Designer	No
Instructional Designer	Not really -- I'm not asked by clients to do much measurement, unfortunately. Most of my work is currently pure instructional design.
Instructional Designer	I am beginning the dialog as part of new strategic planning initiative.
Instructional Designer	Yes, written testing
Instructional Designer	Yes, but due to client confidentiality, I don't think I can be specific here. Sorry.
Instructional Designer	No, not my responsibility
Instructional Designer	Not really; financial data not made readily available to T&D dept's IDs
Not holding any position in HPT	Yes.
Organizational Development Professional	No
Owner, Custom training development and performance support firm	Yes, profitability, utilization, revenue generated per person
Performance Consultant	Reports, weekly surveys in face to face meetings.
Performance Consultant	No, I would say that the results of human capital applications are measured rather than human capital itself. A recent example would be work in an auto insurance claim department. The cost per claim, a lagging indicator, measures performance.
Performance Consultant	Measure the total cost of the workforce or TCOW, which includes cost of labor, training, and so on
Performance Consultant	Yes, however, we have a statistical associate who works with us as part of the team
Performance Consultant	No
Performance Consultant	No. As a consultant I have not been asked to measure human capital as yet.
Performance Consultant	N/A

Performance Consultant	No.
Performance Consultant	Not in the current work I am doing, I have done this in past assignments at other clients
Performance Consultant	no
Performance Consultant and Instructional Designer	No
Project Manager	No
Project Manager	NO, I do not. However, PEOPLE within corporations run the 'business' and ultimately lead to the success or demise of the corporation. People possess human capital, and those that use it wisely tend to prosper. If/when people that possess a tremendous amount of human capital leave a corporation, they tend to leave a large hole/gap in both that organization and its performance. Human Capital translates directly into ROI, and in some cases, LOST ROI.
Project Manager	No we do not measure
Project Manager	We have talked to it but never measured it.
Project Manager	On one project we use several feedback instruments to measure employee satisfaction and physician satisfaction within hospitals. On another project I have used 360 degree evaluations with project staff. Our organization itself does nothing to evaluate or measure human capital.
Purchasing, Process Design and Organizational Development	All goals are broken down to an individual level with link to the overarching goal. All goals are expressed in measurable outputs with time.
Trainer/Instructor	Currently not measuring
Trainer/Instructor	Validation of individual proficiency within operational competencies pre and post HPT intervention.
Trainer/Instructor	Not presently. At Visteon we used needs assessment to determine current state skill and knowledge.
Training Manager	No.
Training Manager	Somewhat, less than we could
Training Manager	No
Training Manager	No
Training Manager	Not really.
Training Manager	No
VP, Product Development (talent management IP)	We have developed proprietary assessments for organizational capabilities, cultural alignment, etc.

On the question “Which strategies do you use to link financial data to business strategies?”, almost all of the participants in different job categories articulated and briefed on

strategies they are currently using. Among the strategies, one Human Resource Manager mentioned the use of Balanced Scorecard, one educator mentioned Bernardez's Business Case model, Instructional Designers and Performance Improvement Consultants suggested commonly known ROI and business practices. Table 27 shows all the feedback from all the participants who chose to answer this question.

Table 27

Participants' Feedback on Question: Which strategies do you use to link financial data to business strategies?

Job Category	Feedback
CEO- Automotive Parts Producer	Business strategies are quantified financially to economic value creation for equity holders
Director E&T Organization	Cost of programs assessed with improved productivity of personnel; time spent on training; budget execution rates.
Educator (Academic)	None--don't do this type of work
Educator (Academic)	Continuous, on-going, and as-needed discussions (formal and informal) with stakeholders
Educator (Academic)	The items in this survey are pretty basic. We need to know all of them. We need to see the relationship of our performance improvement work and business strategies.
Educator (Academic)	Bernardez's Business Case Model that links Outcomes (Mega) and Outputs (the conventional bottom line.
HR/OD Consultant	I try to make sure that metrics are incorporated when I facilitate strategic planning sessions. Some of these are financial others are more related to HR. One example, the cost of turnover in an organization.
HR/OD Consultant	None
Human Resource Manager/Director	HR does not have specific strategies in place.
Human Resource Manager/Director	Common practice is to use a balanced scorecard at a divisional level with financial metrics. Metrics drive decision-making about what investments to make to improve the business' performance.
Human Resource Manager/Director	Monthly analysis of data and review of trends and recommendations with key business leaders.
Instructional Designer	Management provides frequent updates on organizational goals in terms of financial data training department has not yet dived deep into justification of programs in terms of

	financial impact
Instructional Designer	In previous positions I have had, everything was routed back to employer investment in human capital. For instance the cost of bringing a new employee up to top performance levels. Cost was diminishing curve based on time to performance.
Instructional Designer	None
Instructional Designer	We use impact maps to draw a clear line of sight between skills/knowledge, job-level results, and departmental and company business goals (which usually include a financial component).
Instructional Designer	At this time that information is only known to the owners of the company. We are moving toward a more open information system - but it will take time.
Instructional Designer	Currently not my responsibility
Instructional Designer	N/A
Not holding any position in HPT	Actual performance data with the expected goals to find the gaps.
Organizational Development Professional	Profit margin and market share.
Performance Consultant Instructional Designer	N/A
Owner, Custom training development and performance support firm	They link to revenue, profit, and cash flow measures.
Performance Consultant	Referrals and rewards, incentive based programs that are highlighted by employee input.
Performance Consultant	Unless an intervention is specifically required to address a financial performance gap, I do not link financial data and business strategies. When performance improvement is needed, often the client has determined what the solution will be.
Performance Consultant	Use a form of the business impact map, which shows a business metric for each business strategy and performance requirement
Performance Consultant	In the analysis we determine the outcome for the training design and outcomes
Performance Consultant	Unclear about your intent here. I often find that the logic behind forecasts must be questioned, but my role is to ask the questions. I don't have the "brief" to validate the linkage.
Performance Consultant	Cost Benefit Analysis, Applying costs to process and procedures for product cost and pricing
Performance Consultant	I have never been in a project in which this was my role.
Performance Consultant	Impact of training on performance--do those who have completed the training have a higher number of billable hours than those that don't OR do those who have completed the training command a higher per hour billable rate than those who haven't completed the training OR do those who have completed the training produce work with fewer errors and thus require less rework and quicker product to market
Performance Consultant	Level 4 evaluation (ROI)
Project Manager	None

Project Manager	Depending on the Client, Program and/or Project, this may or may not be applicable or important to that Client. However, courseware design may need to incorporate specific goals that fulfill strategic business objectives for clients (such as linking $ incentives to certain HR requirements based on timing of course completion, etc.).
Project Manager	We monitor forecasts and budgets to plan but not for this level or ROI
Project Manager	In our small organization, we are able to gather all the employees to discuss revenue, expenses, budgets as it relates back to our business goals and achievements.
Project Manager	Organizationally, I don't believe this occurs. I work in a private non-profit organization. From a project perspective, I personally have worked with staff to develop program budgets, monitor program expenditures by type, and have developed rewards or incentives if spending is at or under budget.
Purchasing, Process Design and Organization Development	Processes and their measureable results are linked to the scorecard for the company. Business strategies have financial goals linked to the business scorecard, target setting, budget and individual goals.
Trainer/Instructor	Currently no strategies in place
Trainer/Instructor	Currently as a discussion item only, the effects of interventions and increased proficiency on discretionary spending ie: overtime.
Trainer/Instructor	Have worked with the balanced scorecard.
Training Manager	N/A.
Training Manager	None
Training Manager	Cost analysis return on investment
Training Manager	Common measures include assessing results in Six-sigma projects, ROI, cost reduction, performance statistics and so on.
Training Manager	Calculate present costs to expected gains in terms of changes in Marketshare, efficiency, gross profit.
Training Manager	Direct communication to stakeholders and affected groups. Drawing the line of site between activities and interventions and the resulting effects on customer response- the bottom line measure of whether we are succeeding.
VP, Product Development (talent management IP)	I'm not a fan of most ROI studies as conducted by HPT/T&D because they're simplistic and fail to show cause and effect. I think the Return on Strategy approach and focus on business outcomes is better. Also, we need to do our financial analysis up front, not after an intervention. Think about how capital equipment purchases are justified. It's all done before the investment is made. Once the money's spent, it's a sunk cost and there's little value revisiting it. There's not enough room here to discuss this fully, but there's a huge need for greater financial sophistication in our field.

On the question “To be effective and efficient, an HPT practitioner must speak the language of finance.”: The majority of the participants in all job categories confirmed, emphasized and underlined this question with narratives such as bringing value to the bottom

line, communicating and influencing the top executive management, sitting at CEO's table, and measuring in dollars. Only five answers were ambivalent. Table 28 shows detailed statement of all participants who echoed and expanded the meaning of speaking the language of finance in their work and their client's workplace.

Table 28

Participants' Feedback on Question: To be Effective and Efficient, an HPT practitioner must speak the language of finance.

Job Category	Feedback
CEO- Automotive Parts Producer	Creating economic value is expressed in financial terms. If you do not understand it, you cannot bring value to the bottom line
Director, E&T organization	Our government organizations are under increased scrutiny for effective fiscal management and investment. There is extreme interest at the highest levels to elevate the financial knowledge of all managers at all levels within our organization.
Educator (Academic)	I think this is a bit of a phoney issue. If things are all framed in terms of a full value chain that includes Mega, the terminology will be more compatible.
Educator (Academic)	This is extremely important since HPTers must always keep the business perspective in mind in working with clients. The bottom line is always important. Knowledge of finance opens many doors and many windows.
Educator (Academic)	Yes, we definitely need to speak the language of finance. The language of finance is the language of the top, chairman, CEO, senior executive. We also need to provide examples in a fashion described by Brinkerhoff. This is also the language of senior executives. I do not encourage students to think about ROI all of the time. ROI calculations involved a lot of speculation about the contribution of training or performance improvement to a comprehensive workplace situation.
Educator (Academic)	I think that it depends upon the level at which the HPT practitioner is operating--particularly if he or she is a consultant. For the small scale kinds of things that I do, finance doesn't play an important role.
Executive Coach	One must be able to understand at a high level in order to highlight key financial findings.
HR/OD Consultant	To be effective and efficient, the HPT practitioner must speak and understand the language of finance.
Human Resource Manager/Director	I don't understand the question. I agree with the statement in general, but only to the extent that it helps clarify one of the many dimensions that leaders care about in a business. Other dimensions might include operational/quality 'languages'.
Human Resource Manager/Director	Our Senior Management are all financial professionals and actively work with HR to obtain the data they need. However HR has limited knowledge in this area and responds but does not proactively look for human performance solutions that will impact the bottom line.

Human Resource Manager/Director	I agree 100%! I began my career in Finance and have held management level positions in Accounting and Finance prior to moving into Learning & Development and now HR. I have far more credibility than my peers whose backgrounds are very different. Not only can I speak the language of finance, I often point out how financial measures and reports can be used to provide context to discussions and in making decisions. I also have been successful in helping managers outside of the HR/L&D/OD field understand the value in what we do by using financial examples.
Instructional Designer	Yes and no. it depends on what is valued by stakeholders - do they focus on financial outcomes or other types of outcomes such as performance improvement or customer service? as an HPT, you need to be able to have some understanding in order to manage the intervention (e.g. budget and selected implications) but an extensive knowledge is not needed.
Instructional Designer	I have to "prove" myself, my work, and my program on a daily basis. I need to know how to compare my work to the product visibly leaving the building.
Instructional Designer	Money is a key area of measurement in business. For some stakeholders (investors) it is the only measurement. However, the HPT practitioner must speak the language of business of which finance is a part.
Instructional Designer	HPT must know basic financial terms to request the information that they need.
Instructional Designer	I am mostly in training. But, to show results, it IS important to show financial baseline, potential savings, gap closure towards targets, and actual savings.
Instructional Designer	Interventions cost money. clients want to know how much money is being lost because of a performance gap and how much the intervention will reduce or eliminate this
Instructional Designer	I think it is important to understand and apply, even at a high level, the financials of an organization and how to link HPI to the business.
Instructional Designer	This is an area that I do not know much and need to learn more.
Instructional Designer	Speaking the language of finance is an essential skill for all HPT practitioners. Although the impact of HPT is not always financial, showing a financial impact will certainly get the attention of executives.
Instructional Designer	Bottom-line results for all companies always incorporate at least a few financial measurements. Understanding these goals, and how human performance can directly contribute to achieving these goals, is critical for anyone in the human performance improvement field. And speaking that financial language is necessary to be able to communicate effectively and persuasively with our clients and stakeholders.
Not holding any position in HPT	A HPT practitioner should not only possess knowledge of human performance improvement but also the technical domain of finance before he/she can provide insightful perspectives to top management team for performance improvement. This is especially true in finance as the fluctuation of finance earnings may be the output of a variety of factors, including how the employees actually perform their functions.
Organizational Development Professional	No. I think that it is important to understand the financial state of your company. It dictates how much will be spent on development programs and enhancements, but it is not critical to the individual performance of most employees unless they are involved in those fields.
Owner, Custom training development and performance support firm	Yes, but only conceptually.
Performance Consultant	Agreed, and learning
Performance Consultant	I agree and have taken some basic courses on this however I never get the opportunity to use it with other teammates in place

Performance Consultant	We are hired to help businesses grow. Our interventions are meant to improve performance and ultimately the bottom line whether we affect change in the climate or improve skills. Financial returns are the measure of our effectiveness.
Performance Consultant	Unclear on your intent here too. Finance is often not the dominant language of a corporation. There are other "languages" that are equally important for HPT practitioners to speak: strategy, systems, product marketing...
Performance Consultant	In order to work with the highest level of management at a company, I imagine that speaking the language of finance would help very much. In the projects I've had, I just defined and analyzed performance-- working with management on improving performance so that they would meet their objectives and goals. I can see how they might be much more motivated to implement recommended strategies more thoroughly if I could show them the financial implications.
Performance Consultant	The more you can tie the interventions you produce to level 3 and level 4 outcomes (Kirkpatrick)the better you can demonstrate reductions in costs/scrap/rework and the higher return on investment to the company and impact on the bottom line. The key is having mechanisms to measure the change and a system to place $$ related measures on the outcomes produced
Performance Consultant	Not really
Performance Consultant	Somewhat agree. We must speak the business language of the client, so the basics such as profit, revenue, ROI, payback, cost of workforce, assets. But more important is understanding how to build a logical business case that shows linkage between performance and the metrics and impact on profit, revenue, productivity. etc.
Performance Consultant	I disagree with the statement. To be effective and efficient, an HPT practitioner must understand the language of the customer.
Project Manager	In order for an HPT practitioner to be credible, the HPT practitioner must be able to speak the language of finance. How can you expect to sit at the CEO table and not have a basic understanding of finance. Financial data are crucial in determining where an organization currently stands and where the organization wants to be. Strategic goals have a financial component. An HPT practitioner must have knowledge on the language of finance.
Project Manager	Somewhat
Project Manager	If you don't understand the financial ramifications of recommendations you might make to an organization, of what value are these recommendations?
Project Manager	Human Performance Technology Practitioners must have an understanding not only of individual contributor's performance, but the gaps in performance that roll up into the business and are measurable in DOLLARS. Additionally, recognizing the Finance Systems most applicable to their client will assist in establishing better Client relationships and credibility to complete work (and to see its value).
Project Manager	Finance appears as the "be all, end all" for companies. To be and effective HPT practitioner, you must be able to understand and apply financial terms practices to what you do, and help your learners also understand and apply them as well.
Project Manager	Not sure I agree
Purchasing, Process Design and Organization Development	No, you just have to explain it properly in non-financial terms to someone that does not understand. Why make it complicated?
Trainer/Instructor	The language of finance is important in many fields however as a HPT practitioner, one must speak fluent finance to convey a message of improving the bottom line with the improved performance of individuals and their use of current technologies.

Trainer/Instructor	In all most interventions require funding and through conversations with executives, the ROI of interventions must be shown if necessary. A Practitioner must understand and speak the language of finance.
Training Manager	Not to be flippant but...dud. Finance is how business keeps score. It is not important, it is crucial...it is a matter of survival. We have to be a part of the business if we are to be effective.
Training Manager	It is imperative that we "speak the language" of an executive team. Understanding and communicating our knowledge of financials would enhance our credibility AND our practice.
Training Manager	All business professionals should have some concept and understanding of finance and be able to effectively apply it in day to to day operations while analyzing the cost effectiveness and return on investment at the close of quarters and annually.
Training Manager	Yes and no. Many projects we have don't directly connect to bottom-line measurements as they involve learning new technologies. Nothing to compare performance to. On the other hand, cost reduction is measured. The language of finance is no different than learning engineering language, performance language. If your question is, should HPT people be capable of using finance language as a result of education and training in it, I'd answer a "maybe". If they need it, they should learn it. The same could be said about expertise in many, many other areas.
Training Manager	If you can't measure your business you can't manage it. If you can't manage your business, you won't be in it very long.
Training Manager	Must be able to comprehend finances to make informed business decisions.
VP, Product Development (talent management IP)	Yes, this is a pet peeve of mine. Very few practitioners can read financial statements and understand the time value of money. Without a baseline of financial acumen, you won't have credibility with senior management.
Trainer/Instructor	Yes, I agree. Unfortunately, I have had very little training or access to financial information. I recognize the need and my lack of knowledge. I have relied on the expertise of others to show the financial benefit of a particular intervention.

Summary

Results from conducting various statistical procedures such as instrument reliability, factor analysis, Dependent Hotelling's T^2, and MANCOVA were reported in this chapter. Each research question was presented with individual *t*-test results. Demographic variables of the participants and the analysis of the feedback of the 3 open ended questions were presented. The results were presented in the order of: (1) a description of the participant profiles, (2) reliability test scores of survey questions, (3) factor loading analysis of survey questions, (4) gap analysis of mean difference of Current State and Future Importance of research questions, (5) affect of

participants' answers by their job categories, and (6) analysis of commonalities of participants' feedback of the three open ended questions.

Overall variables and individual dependent variables obtained high Cronbach's Alpha reliability test scores except scores of DV Impact. Factor analysis of factor loadings and three factor components were explained and factor loadings in the three components were shown in tables. Dependent Hotelling's T^2 was conducted to obtain statistical mean difference for the ten research questions. Individual *t*-test scores were presented separately by each research question with their corresponding tables. Finally, MANCOVA procedure was used to find probable affect on participants' answers and their job categories. There was no statistical significance. Lastly, the commonalities of feedback by job categories to the 3 open ended questions were analyzed and presented with narratives and tables. Discussions on the findings, implications of this study to the field and general discussion and recommendation on future research will be presented in Chapter 5.

CHAPTER 5 DISCUSSION AND RECOMMENDATIONS

The design, development and implementation of this study focused on answering two overarching questions: (1) What finance knowledge do HPT practitioners possess? and (2) How do HPT practitioners use their finance knowledge and skills in their work? An online survey was administered to obtain answers directly from practicing HPT professionals. There were 67 HPT practitioners who participated in the online survey. Every question in the survey, except the demographic and the three open ended questions, sought two levels of answers: Current State and Future Importance. By measuring the Current State and Future Importance of the *What* and *How* of knowledge, skills and use of finance of HPT practitioners, the need of finance competencies of HPT practitioners was found.

This chapter includes a discussion of limitations, implications of this research to the field, future research recommendations, and final thoughts.

Limitations

Limitations and imperfections of this study certainly suggest future opportunities for improvement and work. Many of the limitations in this study shared one or more of the following characteristics.

The adaptation of Rothwell's instrument provided the framework for the questions of the instrument used in this study. There was no indication that a documented validation process was applied to the Rothwell's instrument. Therefore, this research knowingly inherited and adapted all the strengths and weaknesses of the Rothwell's instrument. Although the instrument of this research was validated by three content experts and was piloted with five experienced practitioners in the field, some cosmetic changes and improvements were made to the instrument;

however, changes were kept to a reasonable level so that the originality of the questions in the Rothwell's study was not compromised. All survey questions except questions 8, 11, and 14, obtained high and acceptable Cronbach's alpha scores. These three questions merit further evaluation for future use. Furthermore, due to constraints of time, money and available human subjects, the validity and reliability test of the instrument for this study was not executed in a larger scale. Therefore, results and findings could be confounded because of the depth and scope of the instrument.

Low participation in the study resulted in a very small sample size of 67 which limited and hugely confounded the generalization of the findings. During the two months' survey period, various follow ups were executed (as explained and detailed in Chapter 3), and many supports from ISPIs and several ISPI members helped promote the survey. Yet, the response rate only increased by a small margin. However small the sample size, its quality characteristics cannot be dismissed. As reported in Chapter 4, participants from widespread geographic locations in the U.S. mainland, Canada and Mexico answered questions. Also, 73% of the participants were experienced in practicing HPT more than five years.

Similar to other self-report studies, this research depended on HPT practitioners to report their own finance knowledge and skills and use of finance in their performance improvement activities. Therefore, this study was subject to individual perceptions, bias and interpretations.

Needless to say, the weakness of the researcher's ability, knowledge and experience imposed a level of limitations to this study. Fortunately, its limitations were tamed due to extended support and directives from the researcher's advisor, the committee and the quality of survey responses received from the participants.

Implications to Instructional Design

HPT anchors its roots firmly in the field of Instructional Technology. The instructional design theory, research, models of analysis, design, development, implementation, and evaluation are the foundation of *instructional* and *non-instructional* interventions. Brethower (2004) stated critically,

> Dividing the performance world into two camps – the instructional and the non-instructional – is akin to dividing the United States into Boston and outside of Boston, or the field of journalism into The New York Times and other journalistic outlets, or the political landscape into the enlightened (us) and the Stupid (them). (p. 7)

As such, our practitioners have informed us two things in this research: (1) their answers were similar regardless of their primary job categories (cf. Chapter 4, results of MANCOVA –Affect of Job Categories to Current State and Future Importance Scores), (2) their needs of finance competencies were the same (cf. Chapter 4, Table 29 *Participants' Feedback on Question: To be Effective and Efficient, an HPT practitioner must speak the language of finance*).

The role of management of instructional design practitioners has been explained and defined by many leaders in the field of Instructional Technology (cf. Finn, 1960, Ely, 1970, Seels & Richey, 1994, Januszewski, 2001, Donaldson, Smaldino, & Person, 2008). Within the domain of management, Seels and Richey (1994) clearly delineated four management functions: project management, resource management, delivery system management, and information management (pp. 48-50). Also, they have identified many management tasks which they noted, "fiscal tasks encompass budget planning, justification and monitoring, accounting and purchasing" (Seels & Richey, 1994, p. 50). In accord with Seels and Richey, Donaldson et al. (2008) wrote the following definition on management,

> Management means effectively orchestrating people, processes, physical infrastructure, and financial resources to achieve predetermined goals. Effective management is important regardless of the setting. Whether a media center that bases the products and services it offers within a school districts' financial limitations, a university-based faculty development program that operates as a cost center, or a privately run e-learning company with daunting profit and return-on-investment (ROI) targets for owners and shareholders, effective management means that goals are achieved and clients are satisfied while budgets are met. (p. 178)

The findings of this research posit that most of the ID practitioners work in the business and industry sectors. Just as Richey and Morrison observed in 2002,

> Since the 1980's, the preponderance of instructional design (ID) practice has occurred within the private sector, primarily in business and industrial settings… this growth reflects an emphasis not simply on producing a more knowledgeable workforce, but increasingly also on improving employee on-the-job performance and solving organizational problems. (p. 198)

Like HPT practitioners, ID practitioners must justify and add value of their work to their clients' or employers' bottom lines. So, their need of finance competencies is the same as the need of HPT practitioners.

One might argue that the small sample size limited its ability to generalize to a larger ID population. For this very reason, the research instigates future studies. One of the future studies is to extend this research to ID professionals in other professional organizations including the Association for Educational Communication and Technology and the American Society for Training and Development. Larger sample size will certainly help the field fine tune its assumptions, opinions and observations on ID's management role as well as the need of finance competencies.

Viewing what the literature suggested above, the role of management suggests knowledge, skills and use other than finance, as this research was focused on. Donaldson et al.,

(2008) identified many management responsibilities. These responsibilities were: the role of change agent, personnel and budget, evaluation, alignment of product and service, translating clients' needs to products and services and problem solving (Donaldson et al., 2008, pp. 190-191). Competencies required to carry out each of these responsibilities ought to be validated. Needs and values of these competencies should be confirmed. Most important, a thorough understanding and affirmation of how these competencies can contribute to the bottom line of a corporation must be recognized. Reflecting on the final words in their chapter, instructional designer or performance improvement consultant must "clearly understand the needs of customers and translating these needs into products and services that resonate in the marketplace [and] it means positioning the value of the product and services so that customers are willing to pay for them" (Donaldson et al., 2008, pp. 190-191). Future research might be needed to uncover more value add and foundational knowledge and skills that ID professionals should possess in this ever changing world of work and management.

Implications for Performance Improvement

Many of the leaders in the field have made observations, given advice and have written numerous articles based on their experiences in measuring and linking worthy HPT interventions with financial data (cf. Chapter 2). The design of this research although focused on finance, is not suggesting that financial data are the only measurement that link and justify worthy HPT interventions. As shown by the results, this research suggested the need of finance knowledge, skills and use by our practitioners.

A collection of the body of literature from the fields of human resource management and organizational development was synthesized and presented in Chapter 2. Both fields have made

tremendous progress in linking the financial worth of worker and workgroup to corporate finance via, at times, very complex statistical models (i.e. Cascio and Boudreau's LAMP model). For example, after conducting the statistical analysis with the model he established, Huselid (1995) confirmed that,

> The coefficient on each practices scale becomes smaller once turnover and productivity have been entered into the models. The magnitude of this effect can be shown by calculating the proportionate change in the impact of High Performance Work Practices on corporate financial performance that can be attributed to the inclusion of turnover and productivity. (p.662)

In a layman's term, Huselid suggested employee turnover and job performance contributed to corporate financial performance applying evidence based research. Schneider, Hanges, Smith and Salvaggio (2003) researched the relationships of employee attitude and corporate performance. They reported, "Three of the employee attitude survey scales revealed an interpretable significant pattern of relationships with ROA and EPS: Satisfaction With Pay, Satisfaction With Security, and OJS [Overall Job Satisfaction]" (Schneider et al., 2003, p. 842). This body of literature needs further evaluation and consideration of its use in the field of HPT. A research and development center at ISPI can be established to examine and infuse the aforementioned research for devising probable statistical models that could link HPT interventions to corporate finance. As such customized services can be offered to HPT consultants, for-profit corporations, non-profit institutions, and multinational business conglomerates.

It is alarming to note that there was no mention or slight indication of the use of HPT models or HPT tools in participants' feedback in the survey. Practical and ease of use principles, models, tools are cited and documented in the ISPI handbooks. Commonly known models like Harless's FEA, Kaufman's OEM, Langdon's Language of Work, Binder's simple count method,

tools and job aids created and compiled in the foundational books by Van Tiem, Moseley and Dessinger (as reviewed in Chapter 2) are published and promoted regularly. This lack-of-mention phenomenon may imply a disconnection of research priority and practice in the field. A future investigation is call for.

Like many professionals and leaders before them, Guerra-Lopez and Leigh (2009) recapitulated in their recent study, "Measurement and evaluation are at the core of reliably improving performance. It is through these central mechanisms that performance improvement professionals are able to demonstrate the true worth of their efforts. However, the true value of the contributions they [HPT practitioners] make is inconclusive" (p. 97). The participants of this research did indicate the use of some application on measuring human capital and measuring return on investment. There might be HPT practitioners who already have substantial finance competencies waiting to be discovered. Follow up research could locate these HPT practitioners and document their work. More discussions about future research follow.

Implications for Training

This research was not to define an instructional intervention of finance for HPT practitioners or architect a framework of finance literature for the HPT field. Rather the findings of this research encourage further research in determining and defining a standard of finance knowledge, finance skills and applications that strengthens the practice of HPT. An immediate follow up study is to conduct a causal analysis which would establish a practical and attainable standard for the knowledge and skills of finance for HPT practitioners. However, a full scope performance improvement project (design, develop, implement and evaluation) is recommended. A daunting task it may sound, but it ought to be done. The need for partnership with HPT

practitioners, universities that specialize in human performance improvement and business management and HPT researchers, is prominent.

For immediate action, ISPI leadership might consider sponsoring a finance workshop at its conferences, design and develop a finance online learning for its members, collaborate with a university integrating finance in an Instructional Technology program, and offer finance as a learning module through HPT continuing education or distance learning. ISPI leadership might also consider incorporating finance knowledge, skills and use in its certification program or in a separate certification for performance improvement practitioners. For example, ASTD has set the precedent for a business certification program (cf. Chapter 2). In the ASTD's Business Essentials Certification training program, financial management is one of the key learning modules.

Furthermore, higher educational institutions might consider a joint degree program offered by a school of management and a college of education within a university. Considering today's technology, such joint venture would have no geographic boundary. Best teaching and resources can be employed virtually from multiple universities and students can be drawn from every corner in the world.

Recommendations for Future Research

Many recommendations have been made thus far in regards to probable future studies in instructional technology, human performance improvement and training. It is noteworthy to remind the readers once again that the low survey response rate seemed to suggest disconnect between practicing and researching. As cited in Chapter 2, Drucker (1979) reminded readers that "it is the practitioner rather than the scholar who develops the discipline, who synthesizes

experience into testable concepts, that is into theory, who codifies, who finds and tests new knowledge, and who teaches and sets the example" (p. 475). Stolovitch, Keeps and Rodrigue (1995) concurred, "One of the best ways to recognize and define a field is by observing what its practitioners do" (p. 40). The cycle of practice and research must be carried out for the sake of advancing the field. It is imperative that research informs, validates and provides evidence with empirical data, models and methods to its practicing twins in the field.

There is no lack of literature written and debated on HPT practice and evidence base research by our leaders. Kaufman and Clark (1999) reasoned,

> As a professional specialty – whether we call it human performance technology, instructional systems development, performance technology, performance accomplishment sciences, human resource development, or training – we are creeping toward a craft and not a scientifically, empirically, or research-based practice … The important thing is that we deal in scientifically based results and add value both inside and outside the organization. (pp. 14-15)

Similarly, Brethower (2004) challenged the field by saying,

> HPT is about human performance 'something'. We have yet to establish the underlying science supporting HPT, *much of which is available in the literature*, but has not been incorporated into principles. Until that occurs, what we practice is something, but not technology… Some principles, especially in physics, have a very broad domain of applicability. Some principles of HPT also have a very broad domain of applicability, but that is weak consolation if only a few people know these principles. (pp. 9-10)

Brethower (2004) continued by noting that, "the common thread among these areas [he listed some worthy HPT interventions] is using the fundamentals of HPT; applying substantiated theory and research to real human performance issues and attaining valuable and measured results" (p. 11).

Some participants' feedback (cf. Chapter 4) captured in this study alone should entice the field to conduct follow up studies. Understanding more thoroughly what practitioners have to

face daily in the workplace, linking practice to the theory and research, strengthening the practice with empirical based research, uncovering new areas, armoring our practitioners with repeatable and practical principles (as Brethower put it) could tighten the balance of research and practice. It would be greatly helpful to the field if an electronic, easy access, organized repository of empirical and evidence based research database exists that includes (1) HPT implementation and evaluation testimonials by products and services, and by industry and by the size of the business; (2) HPT case studies with methods, models and instruments; (3) HPT success stories with lessons learned; (4) business and finance applications in the global economy.

Final Thoughts

The role that HPT plays in theory and practice exists in many jobs. The work of HPT is not confined to a particular industry or a discipline. As Geis (1986) succinctly stated,

> The [HP]Technology is not restricted to a particular *population* or *subject matter*. Performance technologists have designed teaching materials for retarded children and airline pilots, developed management systems for insurance companies and department stores, produced self-instructional books for college students and physicians, constructed environments that encourage curiosity in children, and trained supervisors in interpersonal skills as well as fire safety procedures. Ideally, the technology can address any human performance. (p. 3)

Unequivocally, HPT is also a profession by the definition given by Finn (1953),

> … (a) an intellectual technique, (b) an application of that technique to the practical affairs of man, (c) a period of long training necessary before entering into the profession, (d) an association of the members of the profession into a closely knit group in a high quality of communication between members, (e) a series of standards and a statement of ethics which is enforced, and (f) an organized body of intellectual theory constantly expanded by research. (as cited in Januszewski, 2001, p. 21)

With a foundation established by our leaders, this empirical research was conducted in an effort to contribute to and extend the body of finance knowledge in the field of human improvement.

The research also introduced literature from the fields of human resource management and organizational development to evaluate, adapt and use. The focus of this research was to find out from HPT practitioners (regardless of their job titles) their finance competencies through a comprehensive needs assessment. The importance of finance competencies is confirmed with their responses. In addition, the research validated the opinions of many professionals and leaders in the field of the need for finance competencies of HPT practitioners.

Furthermore, the overall pattern and theme which emerged from the answers of the 3 open-ended questions in this research indicated that respondents who are in higher ranking or senior management positions had greater needs to (1) link performance to corporate finance, (2) measure human capital, and (3) speak the language of finance (cf. Chapter 4). These findings suggest that finance competencies are essential for HPT and ID practitioners in communicating and linking HPT interventions in financial terms when working in business organizations and human performance arenas.

It is the belief of the researcher that cross-sectioned and inter departmental synergy can be established among professional fields and organizations, and university programs. For example, an empirical study found that job performance (one of the seven identified training success indicators) ranked highest in indicating a successful ID project (Klimczak & Wedman, 1996). During the same time, seminal research in the field of OD was published and suggested that employee turnover and job performance contributed to corporate financial performance (Huselid, 1995). Call it coincidental or not, these researchers intended to prove the worthiness of ID and OD at workplace and in the world of work. These are the kind of synergy that ought to be orchestrated and built upon.

The participants provided their answers to the 32 Likert scale questions and provided feedback on the 3 open ended questions. By answering the questions, they rated their Current State and Future Importance of the knowledge, skills and use of finance. All participants answered the questions consistently. The results were unilateral - they confirmed the gap of their finance competencies which further confirmed the need to develop and advance their finance knowledge, skills and use in their practice. Many of them described and inferred in their feedback that an HPT practitioner must understand finance so that they can communicate with top executives, link financial worth of their work to the bottom line, justify expenditure on their projects, gather financial data, perform cost and benefit analysis, and synthesize results of an HPT intervention with financial measurement. As the economy is turning its corner, the human performance field and our practitioners must be strong in resolute and ready for action.

Rossett (2000) discussed intensely the IT knowledge and skills taught in the academy and their use in the work and workplace. On surface, her discussions centered on the instructional design, education and training of IT, but her underlining message was greatly focused on the practice of performance improvement. She pointed out the need of improvements in linking our IT educational program to the practice. She questioned how our IT graduates and practitioners "use their processes, deliverables, and successes to contribute in ways that resonate in their organizations" and how successful our practitioners meet the demands of their clients or employers on "creating rich, repurposible materials and environments that record institutional memories and lessons, provide information, and develop capacity, as needed" (Rossett, 2000, p. 34). The researcher would like to end this chapter with an anecdotal study, revealed by Allison Rossett (2000), which may strike a chord with readers of this dissertation,

> What book would practicing trainers elect to take to the moon, if they could take only one? Would it be Jonassen's *Handbook of Research on Educational Communications and Technology* or Stolovitch and Keeps' *Handbook of Performance Technology* or Ely and Plomp's international tome? So long as there are no weight limits, you would hope that trainers would make those excellent choices; however, if history offers any guidance, as it often does, weight will be a factor and practitioners will not be so inclined. When Lakewood Publishing asked that question some years back, it was Robert Mager's *Preparing Instructional Objectives* and the Bible that the respondents chose to take along to the moon. The Preference in the field is always for the practical and accessible. (p. 35)

So, what book would HPT practitioners elect to take to the moon? Would the choice include publications of knowledge, skills, and interventions of finance?

APPENDIX A

From: Davis, April [April@ispi.org]
Sent: Thursday, May 21, 2009 3:19 PM
To: 'Ann Chow'
Subject: RE: To reconfirm my earlier request in March

Ann:

So nice to hear from you. PerformanceXpress is distributed to approximately 18,000 readers. This includes members and non-members. Since we do not require chapters to submit their member rosters, we don't know how many local members this list includes. It does include three Board members of each local chapter.

Please let me know if I can be of any additional assistance. John would need your article by the 15th of the month prior to publication.

Thanks!
April

From: Ann Chow [mailto:az5763@wayne.edu]
Sent: Wednesday, May 20, 2009 12:18 PM
To: Davis, April
Subject: To reconfirm my earlier request in March

Dear Ms. April,

I am a doctoral candidate of Instructional Technology at Wayne State University. My advisor, Dr. James L. Moseley, asked me to reconfirm with you in lieu of your staff due to the recent ISPI reorganization. My tentative dissertation title is "A Needs Assessment of the Financial Intelligence of Human Performance Practitioners with Implications for Performance Consulting". I am writing and developing my prospectus at the moment.

Back in March, Dr. Moseley and I put forward a request/inquiry of surveying the ISPI membership to Mr. Keith Pew. He informed us that the ISPI Board and management will allow me to announce an invitation-to-participate in my survey via the PerformanceXpress instead of mailing or e-mailing the invitation to the ISPI member mailing list. When I will be ready to administer my survey, I will submit an invitation letter to the ISPI and Mr. John Chen will incorporate the invitation to participate letter in the PerformanceXpress. I would like to know whether this avenue is still accessible to me or not.

After Mr. Pew’s response to our request, I contacted Ms. Francis George in April and obtained some ISPI membership information such as number of members, job titles and others. Since my invitation will go through the PerformanceXpress distribution list, I would like to know some information about this distribution list such as how people signed up for the distribution, I presume that ISPI members are automatically included, are the local ISPI chapter members included in the list, number of e-mail addresses on the list and etc. Who should I contact to obtain such information now?

Thank you in advance for your response to my request and inquiry.

Sincerely,
Ann Chow

APPENDIX B

Invitation To Participate

Dear HPT Professionals,

My name is Ann Chow. I am a doctoral candidate of Instructional Technology program at Wayne State University, Detroit, Michigan. Dr. James L. Moseley is my dissertation advisor.

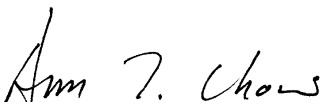
I would like to invite you to participate in an online questionnaire of a needs assessment of finance competencies. It will take you approximately 30-35 minutes to complete this questionnaire. Participants will have the option of entering a random drawing to receive one of five $50.00 VISA gift cards.

Your participation is crucial and pivotal to the findings of this study. I believe the findings of this study will benefit not only our professional practice but also our future research. Drucker once said, "it is the practitioner rather than the scholar who develops the discipline, who synthesizes experience into testable concepts, that is into theory, who codifies, who finds and tests new knowledge, and who teaches and sets the example." I encourage you to participate by clicking on this link – http://education.wayne.edu/financecompetencies.htm

The results of my study will be summarized in a future issue of PerformanceXpress. All information collected about you during the course of my study will be kept without any identifiers. If you choose to participate in the drawing, you will need to provide your name, telephone number and e-mail address on the questionnaire. This information will be removed from the survey after the drawing.

Please e-mail or call me if you have questions on participating in or learning more about this needs assessment. I can be reached at achowsurvey@gmail.com or please call (313) 577-1720.

Sincerely,



Doctoral Candidate
Wayne State University

APPENDIX C

Two Categories of Questions

Finance Knowledge and Skills	Application of Finance Knowledge and Skills
6. Rate your knowledge level on each financial tool: Balance sheet, Earnings Per Common Share, Inventory Turns Ratio, Income Statement, Cash Flow, Debt to Equity Ratio, Return On Asset, Return on Equity, Net Present Value.	19. Feed relevant and pertinent financial information back to stakeholders clearly, specifically, and on a timely basis to the affected worker or workgroup.
7. Rate your knowledge level on each financial systems: Open Book Management, Activity Based Accounting, Total Cost of Ownership, Balanced Score Card.	20. Link human performance improvement interventions to worker, workgroup and organizational financial goals.
8. Use existing or new technology and different types of software such as SAP, Excel, PeopleSoft and/or proprietary financial systems to obtain relevant and pertinent financial data and to apply financial data that link to performance issues.	21. Know how to lead or influence others positively using financial data to achieve desired financial results.
9. Detect performance gaps by analyzing financial data in standard internal and external financial reports.	22. Exercise effective interpersonal influence and work effectively with others to achieve financial goals.
10. Distinguish between financial activities (i.e. accounts payable, asset acquisition) and financial results (i.e. revenue gains, internal accounting transactions) by recognizing their financial implications, outcomes, and consequences.	23. Identify financial inputs, throughputs, and outputs of a subsystem, system, or supra system and apply that information to improve desired financial goals through human performance.
11. Build financial ownership or improving the financial knowledge of individuals, groups, and other stakeholders.	24. Examine effects of prescribed human performance interventions on the identified financial goals.

APPENDIX C

Two Categories of Questions - Continued

12. Understand the financial results that stakeholders desire from a process by providing insight into how efficiently and effectively those financial results can be achieved.	25. Incorporate financial measurement in prescribed human performance improvement interventions to close existing or anticipated performance gaps.
13. Compare actual and ideal financial goals in order to identify overall performance gaps or opportunities.	26. Gather pertinent financial information to stimulate insight in individuals and groups through use of interviews and other probing methods.
14. Identify finance knowledge and skills required of teams, jobs, tasks, roles, and work.	27. Examine financial measurement and data that affects work environment related issues or characteristics.
15. Find useful financial data from the results of performance analysis so you can help performers, performers' managers, process owners, and other stakeholders to do the same.	28. Include financial measurement in selected HPT interventions that address the root cause(s) of performance gaps rather than symptoms or side effects.
16. Forecast and analyze the effects of interventions and their consequences with financial measurements and data.	29. Examine financial effects of multiple HPT interventions on parts of an organization, as well as the effects on worker, workgroup and organization.
17. Link financial data and/or findings to key business issues during the implementation of an HPT intervention.	30. Ensure that business goals are converted effectively into actions to close existing or pending performance goals and measurements.
18. Understand the interdependency of budgets or shared financial responsibility of worker and workgroups in an organization.	31. Help worker, work team and management to interpret and link financial data to their outputs.
	32. Use financial measurements and findings to assess how well the results of a HPT intervention match intentions.

APPENDIX D

You are currently previewing this survey. No responses will be recorded.

A Needs Assessment of Finance Competencies

Thank you for participating in this survey. Please be informed that:

All information collected about you during the course of this study will be kept without any identifiers.

· If you choose to participate in the drawing, you will need to provide your name, telephone number and e-mail address. This information will be removed from the survey after the drawing.

· Only the researcher has the access to the results of the survey.

· This survey will be removed from the system once the data are obtained and analyzed.

A copy of the Research information sheet can be obtained by contacting achowsurvey@gmail.com or (313) 577-1720.

START SURVEY!

You are currently previewing this survey. No responses will be recorded.

A Needs Assessment of Finance Competencies

1 Demographics:

*Please provide your contact information if you want to participate in the prize drawing.
Skip if you do not want to participate the drawing. Proceed and complete all questions.

Only the completed questionnaires are eligible for drawing.

Name:

Phone:

Email:

2 Gender:

Female

Male

3 Years of experience in HPT:

4 Are you a member of (check one):

International ISPI

International ISPI and Local ISPI chapter

Local ISPI

Non-member

5 Please check the one job category that is your primary work responsibility:

Performance Consultants

Human Resource Mangers/Directors

Organizational Development Professionals

Sales Professionals

Trainers/Instructors

Instructional Designers
Training Managers
Educators (Academics)
Project Managers
Marketing Professionals
Evaluation Specialists
E-Learning Management Professionals
Other, please specify

SUBMIT

You are currently previewing this survey. No responses will be recorded.

A Needs Assessment of Finance Competencies

You will be rating yourself twice. Rate yourself on each question by clicking the appropriate number under "Current Level of Expertise" (What is). Then, rate yourself under "Future importance" (What is desired) on each question based on the importance of possessing this knowledge and/or skills for your future success.

Use the following definitions to help you identify your level of expertise – "Current Level of Expertise".

Current Level of Expertise

· None: I have no knowledge of, or experience in, applying finance knowledge and skills. I can understand some book keeping activities. I can read simple accounting and financial reports such as a work unit budget report.

· Basic: I possess general understanding of finance and terminology. I am capable of analyzing and calculating financial numbers based on current and project numbers, i.e. cost and revenue of my human performance projects and business workgroup and unit financial reports.

· Intermediate: I possess a comprehensive understanding of finance and financial principles. I am capable of interpreting and linking financial data and measures not only to my current consulting project but also am capable of demonstrating the financial significance of human performance improvement to the organization.

· Advanced: I possess substantial knowledge and expertise of finance. I am capable of working in complex situations, interpreting, linking and presenting financial data and measuring financial impacts of human performance improvement on workers, workgroups and organization. I speak the language of finance fluently with the executive management team in a multi billions company and/or with a CEO or an owner of a small company.

6 Rate your current knowledge level on each financial tool below:

	1 None	2 Basic	3 Intermediate	4 Advanced
Balance sheet (A statement of a business or institution that lists the assets, debts, and owners' investment as of a specified date).				
Earnings Per Common Share (EPS is a financial indicator of a company that Wall Street watches closely. If a Wall Street EPS expectation of a company is not met, the share price is likely to drop).				
Inventory Turn Ratio (This measure indicates management efficiency in managing its inventory).				
Income Statement (A financial report includes the revenues and expenses of a business as of a period of time i.e. a month or a year).				

Cash flow statement (An amount of cash that is available to meet payment of debts, salary and other expenses).

Debt to Equity Ratio (This ratio tells how much debt a company has for every dollar of shareholders' equity aka owners' equity).

Return On Asset (ROA is a measure of operating efficiency, of how well a company has used the assets under its control to generate income).

Return on Equity (ROE is a measure of operating efficiency; mostly concerns with the return on a company's investment).

Net Present Value (A more complex method of calculating paybacks for a company's up front cash such as expenditure, investment or loan).

7 Rate your current knowledge level on each financial systems below:

1	2	3	4
None	Basic	Intermediate	Advanced

Open Book Management (Employee participation in the running and managing the financials of the company is the crux of OBM).

Activity Based Accounting (ABM uses activity-based cost information and performance measurement to influence management action).

Total Cost of Ownership (To establish concrete links between qualitative performance efforts and bottom-line results i.e. Six Sigma).

Balance Score Card (By focusing not only on financial outcomes but also on the human issues, the balanced scorecard helps to provide a more comprehensive view of a business).

8 If you did not provide an answer for any of the items in Question #6 and #7, please specify the reason(s).

9 Please answer the following questions based on your current level of expertise.

1	2	3	4
None	Basic	Intermediate	Advanced

Use existing or new technology and different types of software such as SAP, Excel, PeopleSoft and/or proprietary financial systems to obtain relevant and pertinent financial data that link to performance issues.

Detect performance gaps by analyzing financial data in standard internal and external financial reports.

Distinguish between financial activities (i.e. accounts payable, asset acquisition) and financial results (i.e. revenue gains, internal accounting transactions) by recognizing their financial implications, outcomes, and consequences.

Build financial ownership and improve the financial knowledge of individuals, groups, and other stakeholder.

Understand the financial results that stakeholders desire from a process by providing insight into how efficiently and effectively those financial results can be achieved.

Compare actual and ideal financial goals in order to identify overall performance gaps or opportunities.

Identify finance knowledge and skills required of teams, jobs, tasks, roles, and work.

Find useful financial data from the results of performance analysis so you can help performers, performers' managers, process owners, and other stakeholders to do the same.

Forecast and analyze the effects of interventions and their consequences with financial measurements and data.

Link financial data and/or findings to key business issues during the implementation of an HPT intervention.

Understand the interdependency of budgets or shared financial responsibility of worker and workgroups in an organization.

Feed relevant and pertinent financial information back to stateholders clearly specifically, and on a timely basis to affected worker or workgroups.

Link human performance improvement interventions to worker, workgroup and organizational financial goals.

Know how to lead or influence others positively using financial data to achieve desired financial results.

Exercise effective interpersonal influence and work effectively with others to achieve financial goals.

Identify financial inputs, throughputs, and outputs of a subsystem, system, or supra system and apply that information to improve desired financial goals through human performance.

Examine effects of prescribed human performance interventions on the identified financial

goals.

Incorporate financial measurements in prescribed human performance improvement interventions to close existing or anticipated performance gaps.

Gather pertinent financial information to stimulate insight in individuals and groups through use of interviews and other probing methods.

Examine financial measurement and data that affects work environment related issues or characteristics.

Include financial measurement in selected HPT interventions that address the root cause(s) of performance gaps rather than symptoms or side effects.

Examine financial effects of multiple HPT interventions on parts of an organization, as well as the effects on worker, workgroup and organization.

Ensure that business goals are converted effectively into actions to close existing or pending performance goals and measurements.

Help worker, work team and management to interpret and link financial data to their outputs.

Use financial measurements and findings to assess how well the results of a HPT intervention match intentions.

SUBMIT

You are currently previewing this survey. No responses will be recorded.

A Needs Assessment of Finance Competencies

Rating "Future Importance" should be completely independent of your current level of expertise. "Future Importance" is your assessment of what you think this knowledge and/or skills means for your future success and advancement in your practice. For example, will it enable you to win an HPT consultancy at a multi billion international company? Being a strategic partner of a CEO of a billion dollar corporation? Being an executive on a team within a company making strategic decisions?

Future Importance:

Use the following definitions to help you identify your desired "Future Importance".

· Not important – I do not believe possessing this knowledge or skill is important to my success and/or advancement of my practice.

· Somewhat important – I believe this knowledge or skill is somewhat important to my future success and/or further advancement of my practice.

· Important – I believe this knowledge or skill is important to my future success and/or further advancement of my practice.

· Very important – I believe this knowledge or skill is very important to my future success and/or further advancement of my practice.

10 Rate your knowledge level on each financial tool below based on what you think this knowledge and/or skills means for your future success and advancement in your practice:

	1 Not Important	2 Somewhat Important	3 Important	4 Very Important
Balance sheet (A statement of a business or institution that lists the assets, debts, and owners' investment as of a specified date).				
Earnings Per Common Share (EPS is a financial indicator of a company that Wall Street watches closely. If a Wall Street EPS expectation of a company is not met, the share price is likely to drop).				
Inventory Turn Ratio (This measure indicates management efficiency in managing its inventory).				
Income Statement (A financial report includes the revenues and expenses of a business as of a period of time i.e. a month or a year).				
Cash flow statement (An amount of cash that is available to meet payment of debts, salary and other expenses).				
Debt to Equity Ratio (This ratio tells how much debt a company has for every dollar of shareholders' equity aka owners' equity).				
Return On Asset (ROA is a measure of operating efficiency, of how well a company has used the assets under its control to generate income).				

Return on Equity (ROE is a measure of operating efficiency; mostly concerns with the return on a company's investment).

Net Present Value (A more complex method of calculating paybacks for a company's up front cash such as expenditure, investment or loan).

11 Rate your knowledge level on each financial systems below based on what you think this knowledge and/or skills means for your future success and advancement in your practice:

1	2	3	4
Not Important	Somewhat Important	Important	Very Important

Open Book Management (Employee participation in the running and managing the financials of the company is the crux of OBM).

Activity Based Accounting (ABM uses activity-based cost information and performance measurement to influence management action).

Total Cost of Ownership (To establish concrete links between qualitative performance efforts and bottom-line results i.e. Six Sigma).

Balance Score Card (By focusing not only on financial outcomes but also on the human issues, the balanced scorecard helps to provide a more comprehensive view of a business).

12 If you did not provide an answer for any of the items in question #10 and #11, please specify the reason(s).

13 Please answer the following questions below based on what you think this knowledge and/or skills means for your future success and advancement in your practice:

1	2	3	4
Not Important	Somewhat	Important	Very Important

Use existing or new technology and different types of software such as SAP, Excel, PeopleSoft and/or proprietary financial systems to obtain relevant and pertinent financial data that link to performance issues.

Detect performance gaps by analyzing financial data in standard internal and external financial reports.

Distinguish between financial activities (i.e. accounts payable, asset acquisition) and financial results (i.e. revenue gains, internal accounting transactions) by recognizing their financial implications, outcomes, and consequences.

Build financial ownership and improve the financial knowledge of individuals, groups, and other stakeholder.

Understand the financial results that stakeholders desire from a process by providing insight into how efficiently and effectively those financial results can be achieved.

Compare actual and ideal financial goals in order to identify overall performance gaps or opportunities.

Identify finance knowledge and skills required of teams, jobs, tasks, roles, and work.

Find useful financial data from the results of performance analysis so you can help performers, performers' managers, process owners, and other stakeholders to do the same.

Forecast and analyze the effects of interventions and their consequences with financial measurements and data.

Link financial data and/or findings to key business issues during the implementation of an HPT intervention.

Understand the interdependency of budgets or shared financial responsibility of worker and workgroups in an organization.

Feed relevant and pertinent financial information back to stateholders clearly specifically, and on a timely basis to affected worker or workgroups.

Link human performance improvement interventions to worker, workgroup and organizational financial goals.

Know how to lead or influence others positively using financial data to achieve desired financial results.

Exercise effective interpersonal influence and work effectively with others to achieve financial goals.

Identify financial inputs, throughputs, and outputs of a subsystem, system, or supra system and apply that information to improve desired financial goals through human performance.

Examine effects of prescribed human performance interventions on the identified financial goals.

Incorporate financial measurements in prescribed human performance improvement interventions to close existing or anticipated performance gaps.

Gather pertinent financial information to stimulate insight in individuals and groups through use of interviews and other probing methods.

Examine financial measurement and data that affects work environment related issues or characteristics.

Include financial measurement in selected HPT interventions that address the root cause(s) of performance gaps rather than symptoms or side effects.

Examine financial effects of multiple HPT interventions on parts of an organization, as well as the effects on worker, workgroup and organization.

Ensure that business goals are converted effectively into actions to close existing or pending performance goals and measurements.

Help worker, work team and management to interpret and link financial data to their outputs.

Use financial measurements and findings to assess how well the results of a HPT intervention match intentions.

14 Are you utilizing any human capital measurement methods in your practice?

Human capital = tacit knowledge and institutional knowledge? Please share, please explain.

15 What strategies do you use to link financial data to business strategies? Please list and explain.

16 To be effective and efficient, an HPT practitioner must speak the language of *finance*

Agree? Please elaborate

Disagree? Please elaborate

SUBMIT

You are currently previewing this survey. No responses will be recorded.

Thank you for participating in this survey.

APPENDIX E

From: Cat Russo [crusso@astd.org]
Sent: Wednesday, June 24, 2009 12:56 PM
To: az5763@wayne.edu
Subject: Adaptation Permission

Dear Ann,

Thank you for contacting ASTD regarding adaptation permission of the Assessment Inventory instrument. Yes, you may adapt the instrument without charge. Please provide the following language with the instrument as you are conducting your survey:

"Adapted from ASTD Models for Human Performance Improvement 2nd edition. Published by the American Society for Training & Development, 1999. Used with permission."

Regards,

Cat

Cat Sharpe Russo
Director, International Sales & Licensing
American Society for Training & Development
1640 King Street, Box 1443
Alexandria, VA 22313-1443
Tel. 703.683.8136
Fax. 703.683.9591
crusso@astd.org

Ticket Information:
Ticket #:
5339-9282301
Date
Created:
6/23/2009 8:42 PM EDT
Customer:
Ann Chow (az5763@wayne.edu)
Department:
Customer Care
Summary:
Do I need permission to use?
Details:
Dear ASTD customer service,
I was referred to you by Dr. Rothwell who is the editor of ASTD Models for Human Performance Improve 2nd edition. I am a doctoral candidate of Instructional Technology program in College of Education at Wayne State

University. I would like to adapt the Self-Assessment Inventory instrument (Worksheet #3) in the above book as the base of the questionnaire for my research. I will NOT be using this instrument as is. I will need to tailor the questions and adjust scales to fit my research. I will cite in my methodology chapter the source and on my instrument as well. Please let me know quickly if I need to request for copyright permission to use. If so, what will be the process and how long it will take? Looking forward to hearing from you and thank you in advance.

Sincerely,
Ann Chow, doctoral candidate
Instructional Technology
College of Education
Wayne State University
Detroit, Michigan

APPENDIX F

----- Forwarded Message -----
From: "Judy Hale, PhD, CPT" <certification@ispi.org>
To: moseley@wayne.edu
Sent: Thursday, January 28, 2010 3:34:39 PM GMT -05:00 US/Canada Eastern
Subject: CPT Update - Getting the Word Out

Invitation To Participate in Research Study
This survey comes from Ann Chow. She is a doctoral candidate of Instructional Technology program at Wayne State University. ISPI member, Dr. James L. Moseley, CPT, EdD is her dissertation advisor. She would like to invite you to participate in an online questionnaire of a needs assessment of finance competencies. It will take approximately 30-35 minutes to complete the questionnaire. Participants will have the option of entering a random drawing to receive one of five $50 VISA gift cards. Your participation is crucial and pivotal to the findings of this study. We believe the findings will benefit not only our professional practice, but also our future research. Drucker once said, “It is the practitioner rather than the scholar who develops the discipline, who synthesizes experience into testable concepts, that is into theory, who codifies, who finds and tests new knowledge, and who teaches and sets the example.” We encourage you to participate by clicking on this link: http://education.wayne.edu/financecompetencies.htm. The results of her study will be summarized in a future issue of PerformanceXpress. All information collected about you during the course of her study will be kept without any identifiers. If you choose to participate in the drawing, you will need to provide your name, telephone number, and email address on the questionnaire. This information will be removed from the survey after the drawing. Please email or call Ms. Chow if you have questions on participating in or learning more about this needs assessment. She can be reached directly at achowsurvey@gmail.com or (313) 577-1720.

If you have a story or information you want to share with other CPTs, please let me know. Lastly, if you have a book you would like to promote, please let me know. If you would like to contribute an article to the Performance Improvement Journal (PIJ) or the Performance Improvement Quarterly (PIQ), or write a book, contact John Chen at JohnC@ispi.org.

Sincerely,
Judy
Judy Hale
Director of Certification
Judy@ispi.org
630-427-1304 (direct)
International Society for Performance Improvement
1400 Spring Street, Suite 400
Silver Spring, Maryland USA 20910
ph 1-301-587-8570
fx 1-301-587-8573

APPENDIX G

From: Ann Parkman [aparkman@cepworldwide.com]
Sent: Sunday, January 31, 2010 2:37 PM
To: achow
Subject: RE: Invitation to participate in doctoral student survey

You are welcome. I hope this helps with your responses. I will try to respond this week also.

Ann

From: achow [mailto:az5763@wayne.edu]
Sent: Friday, January 29, 2010 3:19 PM
To: Ann Parkman
Subject: RE: Invitation to participate in doctoral student survey
Dear Ms. Parkman,

Thank you so very much.

I shall keep you informed.

Ann

From: Ann Parkman [mailto:aparkman@cepworldwide.com]
Sent: Thursday, January 28, 2010 4:42 PM
To: External Consultants & Course Managers
Cc: 'az5763@wayne.edu'
Subject: Invitation to participate in doctoral student survey

Hello Colleagues,

I received this note from a doctoral student requesting assistance in spreading the work about her survey to performance improvement practitioners, which you all are. If you would be interested, she would very much appreciate your participation, and, as you will see from the invitation letter, there is an opportunity to win a valuable prize! So check it out.

I hope you are all doing well and that the economy improves soon with interesting work for all of us!

With warmest regards,
Ann

From: achow [mailto:az5763@wayne.edu]
Sent: Wednesday, January 27, 2010 4:21 PM
To: Ann Parkman
Subject: Reconnecting

Good Afternoon Ms. Parkman,

I hope you still remember me, Ann Chow, a doctoral candidate of Instructional Technology at Wayne State University. You helped me collect some of Dr. Mager's articles before.

Well, I am happy to report to you that I completed all my coursework and am writing my dissertation. My dissertation research is on finding out the current state and future needs of finance competencies of and from our performance improvement practitioners. My target participants are professionals whose roles are to improve performance which can be a trainer, IDer, ITer, HPTer, HR, managers and etc. I am collecting data via my online survey.

I am hoping that you might be willing to help me promote my invitation to participate. My invitation (as attached) is published in the January 2010 PerformanceXpress and will be published again in February 2010 issue. I have been monitoring the responses and am not seeing many participations. I need lots of responses :) from our practitioners.

Please help if you can. I thank you in advance.

Sincerely,
Ann

APPENDIX H

Rating Sheet

Finance Knowledge and Skills	**Very Good**	**Good**	**Need Improvement**
5. Rate your knowledge level on each financial tool below: • Balance sheet • Earnings Per Common Share • Inventory Turns Ratio • Income Statement • Cash Flow • Deb to Equity Ratio • Return On Asset • Return on Equity • Net Present Value			
6. Rate your knowledge level on each financial system below: • Open Book Management • Activity Based Accounting • Total Cost of Ownership • Balance Score Card			
7. If you did not provide an answer for any of the items in Question #6, please specify the reasons			
8. Use existing or new technology and different types of software such as SAP, Excel, and/or proprietary financial systems to obtain relevant and pertinent financial data and to apply financial data whenever appropriate.			
9. Detect performance gaps by analyzing financial data in standard internal and external financial reports.			

10. Distinguish between financial activities (i.e. accounts payable, asset acquisition) and financial results (i.e. revenue gains, internal accounting transactions); recognize financial implications, outcomes, and consequences.			
11. Demonstrate awareness of the inner workings of business functions and how business decisions on HPT implementations can and could affect current and desired financial goals and outcomes.			
12. Build financial ownership or improve the financial knowledge of individuals, groups, and other stakeholders.			
13. Understand the financial results that stakeholders desire from a process and providing insight into how efficiently and effectively those financial goals and measurements can be achieved.			
14. Process of comparing actual and ideal financial goals in order to identify overall performance gaps or opportunities.			
15. Identify finance knowledge and skills required of teams, jobs, tasks, roles, and work.			
16. Break down financial measurements of a larger whole and reassemble them to achieve improved human performance.			
17. Find useful financial data from the results of performance analysis and help performers, performers' managers, process owners, and other stakeholders to do so.			
18. Forecast and analyze the effects of interventions and their consequences with financial measurements and data.			

19. Determine key business issues, link financial data and/or findings to these business issues.			
20. Apply determined key business issues and link financial data to these business issues during the implementation of a HPT intervention.			
21. Understand the interdependency of budgets and/or shared financial responsibility of worker and workgroups in an organization.			
22. Measure or help others to measure the difference between actual financial performance and ideal financial performance.			
23. Interpret financial information and feed it back clearly, specifically, and on a timely basis to affected worker or workgroups.			
Application of Finance Knowledge and Skills			
24. Understand the vision, strategy, goals, and culture of an industry; link human performance improvement interventions to worker, workgroup and organizational financial goals.			
25. Know how to lead or influence others positively to achieve desired financial results.			
26. Exercise effective interpersonal influence and work effectively with others to achieve financial goals.			
27. Identify financial inputs, throughputs, and outputs of a subsystem, system, or supra system and apply that information to improve desired financial goals through human performance.			

28. Address effects of prescribed human performance interventions to the identified financial goals.			
29. Show financial measurements in prescribed human performance improvement interventions to close existing or anticipated performance gaps.			
30. See organizations as dynamic, political, economic, and social systems that have multiple goals; drive and influence changes by means of financial goals and measurement.			
31. Gather pertinent financial information to stimulate insight in individuals and groups through use of interviews and other probing methods.			
32. Examine financial measurement and data that affects work environment related issues or characteristics.			
33. Include financial measurement in selected HPT interventions that address the root cause(s) of performance gaps rather than symptoms or side effects.			
34. Examine financial effects of multiple HPT interventions on parts of an organization, as well as the effects on worker, workgroup and organization.			
35. Ensure that business goals are converted effectively into actions to close existing or pending performance goals and measurements.			
36. Help worker, work team and management to interpret and link financial data to their outputs.			
37. Find various financial ways to evaluate and continuously improve HPT interventions before and during implementation.			

38. Use financial measurements and findings to assess how well the results of a HPT intervention match intentions.			

APPENDIX I

Matrix of Questions

Research Focus	Research Questions	Questions
(1) What finance skills and knowledge do HPT practitioners possess?	1.To what extent is an HPT practitioner knowledgeable of financial statements and terms Balance sheet – estimates and assumptions, liabilities and equity, expenses vs. capital, return on assets, return on investment, earnings per share Cash flow – items to calculate cash, cash ratios, accounts receivable aging, Ratios – profitability, leverage, liquidity and efficiency ratios	6,7
(2) How do HPT practitioners use their finance knowledge and skills in their work?	2. To what extent does an HPT practitioner use financial data to justify expenditures in proposed or prescribed performance improvement interventions?	24,28
	3. To what extent does an HPT practitioner analyze financial data regarding performance improvement interventions?	9,27,29
	4. To what extent does an HPT practitioner translate financial data to performance improvement interventions?	25,30,31
	5. How does finance knowledge apply in the work of the HPT practitioner?	8,17,11
	6. What strategies do HPT practitioners use to gather financial data in an organization?	10,18
	7. How does the HPT practitioner analyze financial data?	12,13
	8. How does HPT practitioners use the synthesized financial data?	14,19,32
	9. What strategies do HPT practitioners use to communicate financial data?	21,22,23
	10. How does an HPT practitioner gain financial knowledge and skills?	15,16,20,26

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ABSTRACT

A NEEDS ASSESSMENT OF THE KNOWLEDGE, SKILLS AND USE OF FINANCE COMPETENCIES BY HUMAN PERFORMANCE TECHNOLOGY PRACTITIONERS

by

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AUGUST 2010

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A comprehensive needs assessment method was used in this empirical and evidence base research. The design, development and implementation of this study focused on answering two overarching questions: (1) What finance knowledge do HPT practitioners possess? and (2) How do HPT practitioners use their finance knowledge and skills in their work? An online survey was administered to obtain answers directly from practicing HPT professionals. Sixty seven HPT practitioners participated in the online survey. Every question in the survey, except the demographic and the three open ended questions, sought two levels of answers: Current State (What) and Future Importance (How) of knowledge, skills and use of finance by HPT practitioners.

HPT practitioners who are members and non members of the International Society of Performance Improvement (ISPI) were the target population of this research. The sampling frame of this study was the 18,000 subscribers of the ISPI monthly newsletter –

PerformanceXpress. An Invitation To Participate was published in *PerformanceXpress* twice, in January and February, 2010 issues. A prize drawing of five $50.00 VISA gift cards was offered to entice participation. Zoomerang, the Web based online survey software, was used to collect data from participants. According to the Zoomerang final report, there were 330 visits, 89 complete and 14 incomplete surveys. After screening the raw data, there were 67 usable cases for quantitative analysis. This sample size equated to a 95% Confidence Level and +/- 11.95% margin of error to the sample frame population.

Survey questions for this research were adapted from Rothwell's Self-Assessment Inventory in the *ASTD Models for Human Performance* (Alexandria, VA, The American Society for Training and Development, 1999). The content of the online instrument was validated by three expert HPT practitioners. Followed by two reliability tests, (1) five practicing HPT professionals participated in the pilot and (2) a statistical reliability test was conducted to check the internal consistency of survey questions after the closing of the online survey. All feedback from practitioners was considered and changes were made to the survey questions. Changes made were mainly cosmetic and confusing wordings so that the originality of questions was maintained. The IBM Statistical Package for the Social Sciences (SPSS) version 18 was used to conduct the second reliability test. Cronbach's alpha of .985 of Current State N=38 and .975 of Future Importance N=38 were obtained. Further, Cronbach's alpha ranged from .825 to .957 and was obtained for the 10 dependent variables.

Principal factors extraction with Varimax rotation was performed by using SPSS version 18 on 38 items for the sample of 67 in this study. Principal components extraction was used to extract estimated factor components. The sample of this study obtained the Kaiser-Meyer-Olkin Measure of Adequacy score of .95 and the Bartlet's Test of Sphericity score of χ^2 (703) =

6205.66, $\rho < .01$ Three components were extracted. The cumulative variance of 79.53% was explained. With a cutoff of .30, all of the variables were loaded in 3 factor components. Although a few survey questions could be combined, eliminated and/or distributed differently among the 3 factor components, after careful consideration, the researcher decided to maintain all the variables as planned and proceeded with the Gap Analysis. This decision was influenced mostly by (1) the small sample size, (2) the high consistency and reliability of the sample responses, and (3) the suggested factor loadings in each component which were congruent with the overarching questions of this research.

The gap analysis was conducted by using Stata Data Analysis and Statistical (Stata) software version 10 Hotelling T^2 on the ten dependant variables. All of the ten dependent variables obtained the result of $T^2 = 146.64$; $F\ (10,12) = 13.66$, $p < .001$, which confirmed and supported the significance of difference between Current State and Future Importance collectively. Next, SPSS version 18 *t*-test was conducted to obtain individual scores for each of the ten variables. All ten variables obtained statistical significant results ranging from mean scores of -6.03 to -9.82. These results confirmed the need of finance competencies of HPT practitioners. Further, SPSS version 18 was used to conduct a MANCOVA procedure on finding the effect of participants' primary job role and their answers. There was no statistical significance of MANCOVA found. Lastly, the participant feedback on the 3 open ended questions were reviewed and examined. Themes that emerged from the responses to the open-ended questions emphasized the need to link performance to corporate finance, to measure human capital, and to speak the language of finance.

The statistical results of this research suggested immediate attention and future research in knowledge, skills and use of finance, not only by HPT practitioners, but also by instructional

designers and training professionals. The significance and implications of this research in instructional design, training and HPT were discussed thoroughly in Chapter 5. Most of all, the researcher highlighted and emphasized the pivotal need for the balance of research and practice in our field. Various suggestions were made for future implementations and studies in HPT practice and evidence based research: (1) understand thoroughly what practitioners have to face daily in the workplace, (2) link practice to the theory and research, (3) strengthen the practice with empirical based research, (4) uncover new areas, and (5) arm practitioners with repeatable and practical principles.

AUTOBIOGRAPHICAL STATEMENT

In this age of global changes, Ann Chow has an international education that has prepared her for any challenge ahead. Having studied in Japan, Taiwan, Vietnam, and Italy in her early years, she received her undergraduate degree in Language and Literature from the National Cheng Chi University (Taipei, Taiwan) and completed her Master of Science degree in Applied Management from Lesley University (Cambridge, Massachusetts). Ann completed her doctorate in Instructional Technology at Wayne State University, Detroit, Michigan in 2010.

Ann's business and managerial experiences are as diverse as her academic credentials. She began her career in international import and export of costume jewelry and engine oil products in Taiwan. In November 1979, Ann immigrated from Saudi Arabia to the United States to join her husband in Boston, Massachusetts. In June 1980, Ann was employed by Digital Equipment Corporation (now Hewlett Packard) taking on increasing responsibilities and various roles. Starting as a registrar, Ann was learning the American way of life in business and education. In 1986, she changed her career again to teaching computer courses after receiving her M.S. degree. Two years later, she was promoted to her first management position which grew in size and responsibility to a training center manager position overseeing an operational budget of U.S.$1,500,000/year. From managing people and budgets, Ann moved on quickly with technology trends and business needs by joining the Personal Computer Business Unit where she managed projects and programs. In 1996, Ann was employed by Global Knowledge Network as a product and business alliance manager and was responsible for development of computer network training products and business relationships. From 1997 to 2002, Ann was a program manager at GASC Technology Center, a technical and vocational high school serving 21 school districts in Genesee County, Michigan. As the Program Manager of Business and Visual Communications and Computer Science, Ann set directions and implementations for various curricula such as information systems, web and Internet management and applications, business management in finance, videography, photography, graphic illustration, and computer graphic animations. Taking on an international challenge in 2003 and 2004, Ann was the Director of Technology for The ISF Academy (a new grades 1-12 private school) in Hong Kong. In addition to her day-to-day school operational responsibilities, she defined and designed a WAN/wireless infrastructure for learning and teaching combining data, voice, and video. Currently, she is the Associate Executive Director of Metropolitan Detroit Bureau of School Studies, Inc., a non-profit consortium of public school superintendents and school districts.

Born in Osaka, Japan, Ann is conversant in English, Mandarin, Cantonese, and Italian. She believes in and practices multi-culturalism and integration of all aspects of life: continuous learning, work ethic, and family. During her residence in New England, Ann became an American citizen and served as a member of the Zoning Board of Adjustments in Hudson, New Hampshire for three years. In May 1997, Ann and her husband settled in Flint, Michigan. Ann was actively involved in various community organizations in the Flint area, such as Sunrise Rotary, Genesee Freenet, Eastern Michigan Food Bank, and National Association of Career Women, the Flint Chapter which honored her as the "Woman of the Year" in 2001. Ann and her husband are residing in Anderson, Indiana.