

Human Resources Analytics

Prepared by Dr. Samah Abdelfatah

HRM 623

Lecture 10



SUMMARY AND SAMPLES: HUMAN CAPITAL ANALYTICS

Chapter
12

Lecture 10

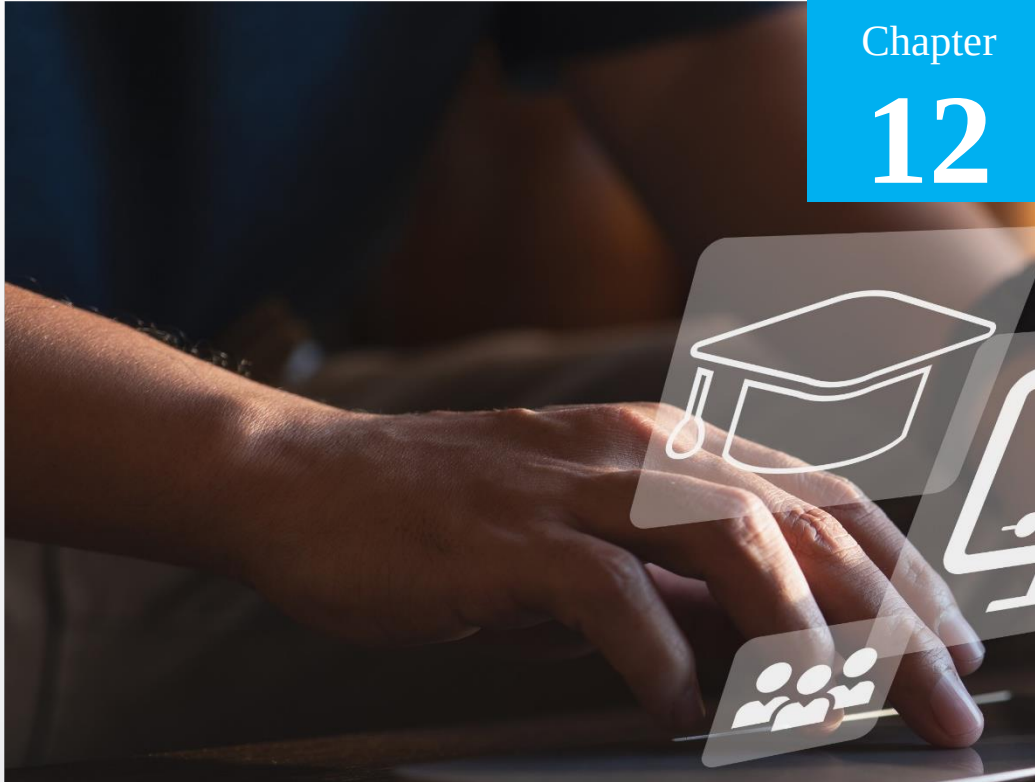
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MAIN TOPICS



**What We Know About Tomorrow?—What Analytics
Can Deliver For Your Organization?—Summary
And Samples —Steps Of HCM:21 Model**

What We Know About Tomorrow?

- A market of intense competition
- A workforce quite different from that of the last quarter of the twentieth century
- Technological advances that hit at a speed you will find difficult to assimilate
- Political upheavals that will affect business in many parts of the world
- A continuation of terrorism threats that raise the general level of tension
- Structural changes in the way corporations are organized



What Analytics Can Deliver for Your Organization?

Software vendor SPSS points out the advantages of predictive analytics:

- 1. Get a higher return on your data investment.** Predictive analytics combines information on what has happened in the past, what is happening now, and what's likely to happen in the future to give you a complete picture of your situation.
- 2. Find hidden meaning in your data.** Predictive analytics enables you to uncover hidden patterns, trends, and relationships and transform these into action.

What Analytics Can Deliver for Your Organization?

3. **Look forward, not backward.** Use the data you already have to help you anticipate future events, and be predictive rather than reactive.
4. **Deliver intelligence in real time.** With predictive analytics, you can automatically deploy analytical results and act as changes occur.
5. **See your assumptions in action.** Advanced analytics tools help you develop hypotheses, test them, and choose the scenario most likely to give you the desired results.

What Analytics Can Deliver for Your Organization?

6. Mitigate risk. Predictive analytics helps you evaluate risk using a combination of business rules, predictive models, and past employee actions, thus minimizing exposure to unforeseen events.

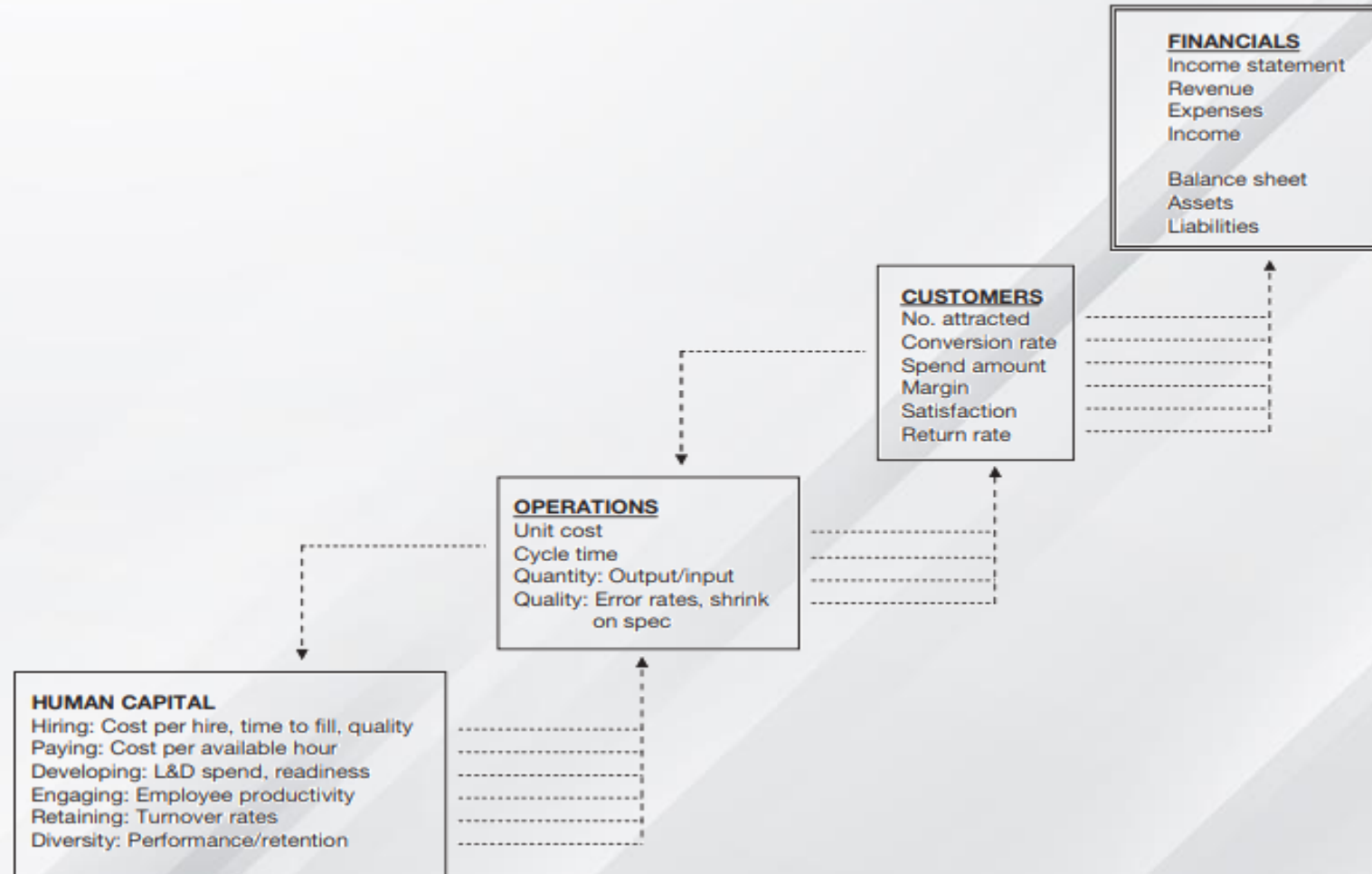
7. Discover unexpected opportunities. You can use predictive analytics to respond with greater speed and certainty to emerging challenges and opportunities.

8. Guarantee your organization's competitive advantage. With predictive analytics, you drive improved performance in all operational areas.

When your organization runs more efficiently, you have what it takes to outthink and outperform your competitors.

Figure 12.1. Data integration: linkages and feedback.

Figure 12.1. Data integration: linkages and feedback.



SUMMARY AND SAMPLES

- Presented the model of HCM:21, or human capital management for the twenty-first century.
- This breakthrough model was developed over a period of eighteen months by the Predictive Initiative, a consortium of major corporations, vendors, and management associations committed to transforming HR into a strategic function.

SUMMARY AND SAMPLES

- HCM:21 is not a human resources program. It is both a management model and an operating system.
- The model identifies mission-critical organizational issues and entities.
- Then it operationalizes how they align, are interdependent, and need to be integrated.
- An outline of the model is shown in Figure A.1.

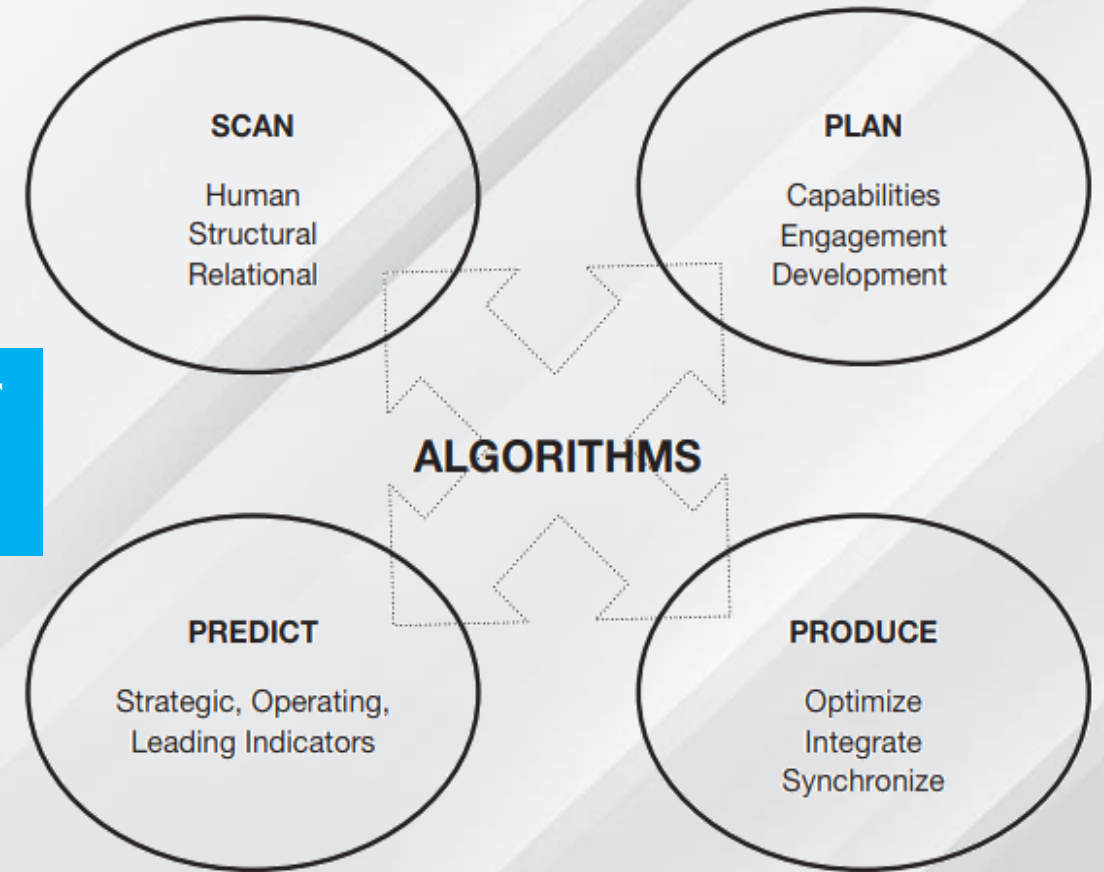
TH STEPS OF HCM:21 MODEL

Following are The Steps Essential To This Model:

- A. The Strategic Scan**
- B. Capability Planning**
- C. Process Optimization**
- D. Integrated Delivery**
- E. Predictive Measurement**
- F. Analytics**

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Figure A.1. The HCM:21® model.



A. THE STRATEGIC SCAN

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- Human capital management typically starts with workforce planning. Planning compares business plan staffing requirements with internal and external labor pools.
- From there a strategy is developed for filling gaps in the workforce. Although the marketplace is continually undergoing radical change, quite often there is no change from past practices.
- Before you can plan future human capital investments, you need to understand all aspects of the market.

A. THE STRATEGIC SCAN

- This includes competition, technology advancements, and regulations, as well as economic, political, and human capital trends.
- This is why the external and internal scan is essential. HCM:21 is launched with a strategic scan of external forces and internal factors that might affect the three fundamentals of the organization: ***human, relational, and structural capital***, shown in Figure A.2.

Figure A.2. Template for a strategic scan.

Organizational Capital	Human	Structural	Relational
External Forces			
Labor supply	Acquire and retain	Remodel workspaces	Find new contacts
Economy	Incent service	Sell off real estate	Retain customers
Globalization	Find new people	Reorganize	Expand suppliers
Regulations	Modify benefits	Go green	Lobby government
New technology	Train staff	Invest in equipment	Update customers
Competitors	Research new knowledge	Design new products	Speed to market
Internal Factors			
CEO's vision	Translate for employees	Make new signs/forms	Advertise in market
Culture	Employee branding	Protocol review	Talk to customers
Brand	Describe to employees	Design facilities	Marketing materials
Capabilities	Facilitate/support	Upgrade processes	Sell competence
Leadership	Survey employees	Review span of control	Visit customers
Finances	Control new hires	Manage expenses	Curtail travel

A. THE STRATEGIC SCAN

- Samples of how and where these forces and factors might affect your organization follow as Forms A-1 through A-6.
- Most important, they remind you that problems in one of the sectors of the organization usually affect the other sectors.
- Technology investments usually require training of operators.
- Economic downturns and upturns change the interactions between human and relational capital and often demand structural investments.

The Strategic Scanner

- **The Strategic Scanner is a series of six forms or templates to use in completing the strategic scan.**

- **There are basically four types:**

(1) a detailed corporate-wide survey and identification of external and internal factors.

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(2) An equivalent survey and identification performed on a function or department level and covering both external and internal factors

(3) An identification and review of the corporate vision, mission, and values

(4) an analysis of corporate objectives and initiatives.

The Strategic Scanner

- **External Forces** are elements outside your company that you believe will have a present or future effect on your organization. This template sample has a general starter set of External Forces, and you may delete these and/or add others as you see fit.
- **First**, identify issues that will arise as a result of External Forces.
- Describe them in a few key words or phrases and enter onto the spreadsheet templates provided here.
- All key issues should be clearly identified, but not all impact cells have to be filled in.
- Consider primarily those significant issues or forces that will demand attention across the entire organization.

The Strategic Scanner

- **Second**, to give the scan consistent structure, link the issues to your organization's three forms of capital: human, structural, and relational:
- ✓ **Human capital** is your employees and active contingent workers.
- ✓ **Structural capital** is essentially things that you own, ranging from facilities and equipment to intellectual materials, codified processes, patents and copyrights, and IT software.
- ✓ **Relational capital** is working knowledge of and relationships with outsiders including customers, suppliers, competitors, regulators, and communities in which you do business

The Strategic Scanner

- This corporate-level scan forms the basis for subsequent forms at the departmental or functional levels to link consistent plans and objectives throughout the company.
- Each level must react to these forces and issues in ways that keep the organization aligned and internally integrated.

The Strategic Scanner

- This corporate-level scan of internal forces follows the same directions as those for the external scan.
- It is a general starter set of forces; you may delete some of these and/or add others as fits your situation.
- When this strategic scan is completed at the corporate level, it can be recreated at the divisional or department level as appropriate.

**A-1. STRATEGIC SCANNER—External Forces
(Sample)**

I. EXTERNAL FORCES		Impact on Organizational Capital		
Change in	Issue	Human	Relational	Structural
Labor Supply	Reduced availability of programmer/analysts in key location markets.	Increase outreach and diversity efforts.	Both R&D and customer requirements are being delayed. Need to refocus development priorities and schedules.	Consider consolidation of resources or support locations to match availability.
	Difficulty in sourcing production and warehouse workers with requisite language and math skills.	Work with temporary agencies and local job boards to increase talent pool and improve basic skill levels.	Increased mandate to understand and communicate realistic customer shipment expectations.	Reduced ability to plan or meet peak production schedules.
Economy	Given current economic outlook, business growth projected as flat for next 2 to 3 years.	Find new ways to improve direct service operations.	Recognizing mutual concerns, retain and reinforce current supplier and customer relationships.	Sell unused real property and unneeded equipment.
	Higher costs of living and housing make recruiting and relocation to this area very difficult.	Increase college recruiting in and new hire relocation to lower-cost areas.	Join with other companies and industry groups to address affordable housing needs in this area.	Consolidate existing operations into lower-cost areas.
	State income tax structure increasing in several current manufacturing sites.	Audit payroll tax structure for employee pay and benefit tax savings, if possible.	Review sales tax structure for out-of-state customer revenue impact.	Reduce noncritical expansion plans.
Industry Trends	Mergers & acquisitions continue among key companies in our industry.	Reformulate management succession-planning process to accommodate unwanted M&A raiding of key senior employees.	Constant attention to stockholders, employees, customers, industry, and community leaders who would all have “a voice” in possible M&A activities.	Review corporate telecommunications, public relations, and security policies.

A-1. STRATEGIC SCANNER—External Forces (Continued)
(Sample)

I. EXTERNAL FORCES		Impact on Organizational Capital		
Change in	Issue	Human	Relational	Structural
Technology Advances	Third-generation products due to market no later than mid next year.	As new technologies are introduced, employee skills and competencies must concurrently be upgraded.	Customers must be better prepared to adopt and integrate new products into existing operations without interrupting current high service levels.	Review Operations' structure to better produce unique products to address changing market demands. Also review Service's ability to support both current and new products.
Globalization	Economic value and market opportunities of our overseas operations continue to increase annually.	Begin identification of labor market and educational and cultural sources to facilitate eventual local hiring needs.	Complete regional economic, political, and environmental scans now in progress.	Establish new offices in Central Europe and Middle East far in advance of our economic expansion plans.
Competition	Lack of differentiation among top three companies in domestic marketplace.	Identify, train, and develop new skills and competencies within workforce to handle reinvigorated design tasks.	Develop more competitive stance in sales and marketing without affecting current customer relationships.	Critically need unique products to address changing market demands.
Customers	Expanding international customers while maintaining domestic base.	Rotate and cross-train domestic and international sales teams to work in global customer presentations.	"Go green" to better position ourselves as a preferred supplier of high-tech products and services.	Redesign sales and service offices to have same branded "look and feel" in all locations globally.
Suppliers	Supplier base is currently steady, but new materials are always being added to procurement lists.	Develop new training program for added procurement team. Increase mutual on-site visits.	Continually review current relationships via Supplier Feedback & Improvement Cards.	No structural changes anticipated.

A-2. STRATEGIC SCANNER—Internal Forces
(Sample)

II. INTERNAL FORCES		Impact on Organizational Capital		
Change in	Issue	Human	Relational	Structural
Vision	"By conducting ourselves ethically, humanely, safely, environmentally, and globally, we will become the #1 supplier of advanced technology components worldwide within the next decade."	Global expansion mandates translation of Vision, Mission, and Core Values statements into at least nine languages.	Need to ensure same Vision is included in external advertising, new product brochures, marketing materials, and publicity.	Long-stated Vision seems well included in corporate plans, employee goals, and most internal publications.
Mission	"Through our people, process, and technology, we develop and deliver leading-generation consumer products."	Focus on multiple programs to make employees into our company's real competitive advantage.	Consider advertising campaign to better position this public message.	Protocol review of all ongoing internal processes to ensure common direction.
Values	"Our company's core values are Leadership, Integrity, Commitment, and Excellence."	To better reflect current concerns, the concept of safety needs to be added to our Core Values statement.	Requires added communication to vendors, suppliers, and service providers on added safety awareness.	New signage and badges need to be published to reflect new Values statement.
Brand	Brand identification is not considered a key issue at this time.	Ensure "people" receive equal attention as process and technology in branding.	Not immediately required.	Not immediately required.
Culture	Redesign may be necessary to gain employee engagement and commitment.	Continually reinforce culture by recognizing and rewarding demonstration of Core Values by employees.	See Vision remarks for inclusion of cultural components in external publications and activities.	Redesign corporate facilities with new Values signage.
Strategy	Need to ensure strategic goals and tactical objectives are communicated through all levels of the organization.	Include more "strategic" corporate messages in ongoing town hall meetings with employee groups.	Confirm key customers' strategic plans are aligned with our goals for next 2–3 years' sales cycle.	Formalize this internal strategic review process to ensure structural goals alignment at corporate levels.
Finances	Given current economy, growth outlook is flat for next 2–3 years.	Institute headcount and position controls in low-impact operations.	Reduce travel and seminars without affecting customer relationships.	Tighten financial and accounting controls to achieve annual targets.

A-3. ORGANIZATIONAL ANALYSIS AND RESPONSE—External Forces
(Sample)

I. EXTERNAL FORCES		Organizational Impact		
Change in	Issue	Functions Affected	Needed Response	Response to Excel
Labor Supply	Reduced availability of programmer/analysts in key location markets.	Information Technology		
	Difficulty in sourcing production and warehouse workers with requisite language and math skills.	Operations; Human Resources		
Economy	Given current economic outlook, business growth projected as flat for next 2–3 years.	Sales; Marketing; Operations		
	Higher costs of living and housing make recruiting and relocation to this area very difficult.	Human Resources		
	State income tax structure increasing in several current manufacturing sites.	Finance; Operations		
Industry Trends	Mergers & acquisitions continue among key companies in our industry.	Marketing		
Technology Advances	Third-generation products due to market no later than mid next year.	R&D		
Globalization	Economic value and market opportunities of our overseas operations continue to increase annually.	Sales; Marketing; Operations		
Competition	Lack of differentiation among top three companies in domestic marketplace.	R&D; Marketing		
Customers	Expanding international customers while maintaining domestic base.	International Sales		
Suppliers	Supplier base is currently steady.	Purchasing; Operations		

Instructions and Comments: Internal Factors (A-4)

Obtain current or revised corporate statements from the Vision, Mission, and Values sheet (Form A-5) and insert in Form A-4, as done for the external forces.

Corporate Vision, Mission, and Values

Instructions and Comments

- Form A-5 should be completed by the **Chief Executive Officer** or **Senior Leadership Team**.
- Review these current vision, mission, and values statements and amend or modify as needed.
- Determine what current or future actions may be taken at corporate level to better commit to, communicate, and implant these positions in the corporate culture.
- When completed, provide copies to the functions or departments for their individual organizational analyses and responses.

A-4. ORGANIZATIONAL ANALYSIS AND RESPONSE—Internal Factors
(Sample)

II. INTERNAL FORCES		Organizational Impact		
Change in	Issue	Function Affected	Needed Response	Response to Excel
Vision, Mission, Values	Review, reeducation, and reinforcement of these statements are required, especially in global expansion mode.	All functions		
Brand	Brand identification is not considered a key issue at this time.	Marketing		
Culture	Redesign may be necessary to gain employee engagement and commitment.	Corporate Management; Human Resources		
Strategy	Need to ensure strategic goals and tactical objectives are communicated through all levels of the organization.	All functions		
Finances	Given current economy, growth outlook is flat for next 2–3 years.	Corporate Management; Finance		

A-5. VISION, MISSION, AND VALUES
(Sample)

Organizational Responses		
	Current	Future
I. VISION		
“By conducting ourselves ethically, humanely, safely, environmentally, and globally, we will become the #1 supplier of advanced technology components worldwide within the next decade.”	Consider rebranding company image to more global presence while maintaining strong domestic-industry stance.	Develop new company slogan or “tagline” to publicize and emphasize this vision.
II. MISSION		
“Through our people, process, and technology, we develop and deliver leading-generation consumer products.”	To meet current business objectives and customer commitments, must deliver new product offerings on time and within budget.	Need to better hire, develop, recognize, reward, and retain our best employees as this company’s competitive advantage.
III. VALUES		
“Our company’s core values are Leadership, Integrity, Commitment, Excellence, and Safety.”	The concept of safety has been added to our Core Values statement. From product design, to component manufacturing, to costumer application, safety is integral to everything we do.	Continually reinforce these values by finding ways to recognize, reward, and celebrate employee demonstration of these values.

Corporate Objectives and Initiatives Instructions and Comments

- Form A-6 should be completed by the **Officer Or Senior Leadership Team**.
- These are key initiatives described at the corporate level.
- More detailed goals and objectives are covered in the function- or department level form. See B-1.
- Review current corporate objectives and initiatives, and amend or modify as needed.
- It is recommended that you limit this to five key strategic objectives.
- After the form is completed, provide this review of corporate objectives to the function/department groups to obtain information that will be used in the delivery planner that follows in step D

A-6. CORPORATE OBJECTIVES AND INITIATIVES

(Sample)

Corp. Goal #	Goal or Objective	Primary Responsibility	Timing
1.	Successfully execute 3-Year Strategic Plan for next-generation product launch, including multi-client solutions, according to announced systems schedule and QRS optimization document.	Operations; Sales & Marketing	First-year schedule and cost model measured and reported monthly to Board of Directors.
2.	Align the Sales/Acct. Mgt./Operations groups' customer-facing strategy to increase revenue by 12.5% year over year. Consider reevaluation of Sales structure based on limited available global resources.	Sales & Marketing; Account Management; Operations	Measured quarterly and achieved annually.
3.	Implement new business initiation process from sales to start-up for all International regions to achieve 8% net OI by year end.	International Operations	Design by end 1st qtr; implement within 2nd qtr; annualize results and audit end of 4th qtr.
4.	Achieve gross revenue, net margin, operating income, and cost containment targets as measured by approved department budgets.	All departments; Finance	Measured quarterly and achieved annually.
5.	Design and improve structured approach to key position skills and leadership competencies for current and 3-year future needs. Match with redesign of management development programs.	Senior Mgt. Team; Human Resources	Design by end 2nd qtr; pilot in 3rd qtr; implement by 4th qtr.

B. CAPABILITY PLANNING

- Once the scan is completed, you have the foundation for an advanced workforce-planning process. Rather than continue to apply an industrial era model, filling holes with interchangeable bodies, now you can think in terms of building capability for the intelligence age in which we function. The strategic scan told you who and what you have to compete with and where your internal process and structures might need recalibration.
- **Now, you can start building capabilities across essential functions.**

Capability Planning Worksheet

Instructions and Comments (B-1)

This section begins the workforce analysis process, both current and future. The first step is to divide the workforce into four categories in terms of their valued capabilities:

1. **Mission critical**—essential to survival
2. **Unique**—market differentiators
3. **Important**—operational necessities
4. **Movable**—outsource or eliminate

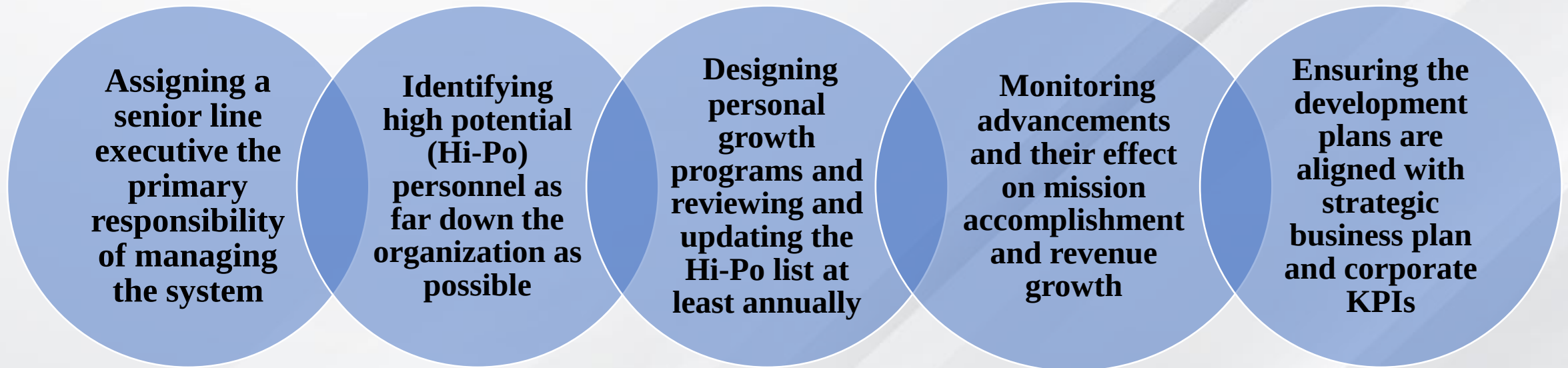
B-1. CAPABILITY PLANNING—Function- or Department-Level Responses
(Sample)

Capability	Primary Function	Criticality*	Organizational Responses	
			Current	Future
1. Third-Level Statistical Methodology Analysis	Operations	MC	Required for next-generation product launch. Presently have two employees enrolled in college courses—expected graduation in June.	Expand college recruiting program for new hires. Consider internal training program for present employees.
2. MIS Database Administration Skills	Information Technology	SO	Presently using outside contractors for temporary assignments.	Need to reinstitute active market search, especially for expansion to international locations. Consider using search agencies for regular hires.
3.				
4.				
5.				

* Criticality Codes: **MC** = Mission critical for competitive advantage. **DU** = Differentiating; uniquely valuable in marketplace. **SO** = Important for sustained efficient operations. **RR** = No longer critical skills; reassign, retrain, or release.

Succession Planning

○ Once the capability planning is completed, you follow the advanced succession planning system. This system is built around five principles:



When you have at least 75 percent of your Hi-Po candidates' development programs fully operational and their replacements ready, you should see a rise in revenue growth per FTE and mission fulfillment. The reason for this is that your Hi-Pos are the key people who drive overall performance.

C. PROCESS OPTIMIZATION

- Periodic process analyses can greatly increase both efficiency and effectiveness.
- This can be used in any process analysis, in any function.
- In human resources, it can be applied to hiring, compensation, development, or retention.
- **In staffing :**
 1. **The inputs** are job applicants who come through a variety of sources, such as advertising, job boards, agencies, and employee referrals;
 2. **The throughputs** are the selection and orientation methods you use, such as individual and group interviews, testing, assessment, or onboarding;
 3. **The outputs** are new hires who can be evaluated in terms of performance (B), salary progression (C), growth potential (P), tenure (T), or other outcomes

Figure A.3. Process optimization.

	SOURCES						METHODS					RESULTS			
	N	M	S	E	J	W	I	G	T	A	O	B	C	P	T
Al		M					I		T			2	2	1	1
Bea					J		I	G	T		O	2	2	2	2
Cee				E			I	G		A	O	3	2	3	2
Didi	N						I		T		O	2	2	2	2
Earl					J		I				O	1	1	1	2
Frank					J		I		T			2	1	1	1
Gina						W	I	G		A	O	3	2	1	2
Hal		M							T		O	2	3	3	2
Isaac			S				I	G		A	O	3	3	2	2
Jon				E			I	G	T		O	2	3	2	2
Ken	N						I	G	T			1	2	2	1
Leo	N						I					2	1	1	1
N = Newspaper, M = Prof Magazine, S = Search, E = Referral, J = Job Board, W = Walk In I = Personal Interview, G = Group Interview, T = Test, A = Assessment, O = Onboarding B = Performance, C = Pay Increases, P = Potential Rating Score: 1 = low, 3 = high T = Tenure: 1 = leave, 2 = stay															

D. INTEGRATED DELIVERY

This Step Has Three Sections In Integrated Delivery Planner.



***D-1. INTEGRATED DELIVERY PLANNER: CORPORATE OBJECTIVES, BY FUNCTION OR DEPARTMENT
(Sample)***

Function or Department			
Corp. Goal #	Goal or Objective	Responsibility	Timing
1.	Successfully execute 3-Year Strategic Plan for next-generation product launch, including multi-client solutions, according to announced systems schedule and QRS optimization document.	Operations; Sales & Marketing	First-year schedule and cost model measured quarterly.
2.	Align the Sales/Acct. Mgt./Operations groups' customer-facing strategy to increase revenue by 12.5% year over year. Consider reevaluation of Sales structure based on limited available global resources.	Sales & Marketing; Account Management; Operations	Measured quarterly and achieved annually.
3.	Implement new business initiation process from sales to start-up for all International regions to achieve 8% net OI by year end.	International Operations	Design by end 1st qtr; implement within 2nd qtr; annualize results and audit end of 4th qtr.
4.	Achieve gross revenue, net margin, operating income, and cost containment targets as measured by approved department budgets.	All Departments; Finance	Measured quarterly and achieved annually.
5.	Design and improve structured approach to key position skills and leadership competencies for current and 3-year future needs. Match with redesign of management development programs.	Senior Mgt. Team; Human Resources	Design by end 2nd qtr; pilot in 3rd qtr; implement by 4th qtr.

D-2. KEY GOALS FOR FUNCTION OR DEPARTMENT
(Sample)

Dept. Goal #	Corp. Goal #	Goal or Objective	Responsibility	Timing
1.	5.	Design and improve structured approach to key position skills and leadership competencies for current and 3-year future needs. Match with redesign of management development programs.	CHRO & Management Development Dept.	Design by end 2nd qtr; pilot in 3rd qtr; implement by 4th qtr.
2.	3.	Complete evaluation and reorganization of International HR organization to better support key global operations as measured by business component management.	International HR staff at each designated location	Design by end 1st qtr; implement within 2nd qtr; annualize results and audit end of 4th qtr.
3.	2.	Develop more effective sales incentive plan and streamline compensation accounting practices to achieve 25% reduction in their administrative costs.	Compensation Dept.	Design by end 2nd qtr; implement by 4th qtr.
4.	5.	Activate new modules to HRIS system to support succession planning; competency planning, 360 reviews per HR & IT schedules.	Compensation, Training, and ER departments	Measured monthly against proposed IT schedule.
5.	4.	Meet all annual headcount and operating budget targets, including cost reduction plan targets for external ER activities.	CHRO	Measured monthly and achieved annually.

E. PREDICTIVE MEASUREMENT

E-1. METRICS EVALUATION

SMART TARGETS

A. Strategic-Level Metrics

Revenue per FTE
HCROI
HCVA
Brand Recognition
Market Reputation
R&D Spend

Sample SMART Target:

"Achieve gross revenue of \$250,000 per full-time equivalent employee (FTE) measured corporate-wide by year end 2008."

B. Operational Metrics

Hiring Effectiveness
Competitive Total Compensation
Training & Development
Retention & Commitment
Management Tenure
Key Worker Turnover

C. Leading Indicators and Intangibles

Leadership
Culture Engagement
Competency Readiness
Succession Readiness
Technology Innovation

F. ANALYTICS

- Business intelligence tools have been adopted by finance and marketing, but they are seldom applied to human capital management.
- With the HCM:21 model you can statistically analyze connections across various human capital functions and outcomes.
- In the past scanning, planning, processing, and measuring were distinct functions.

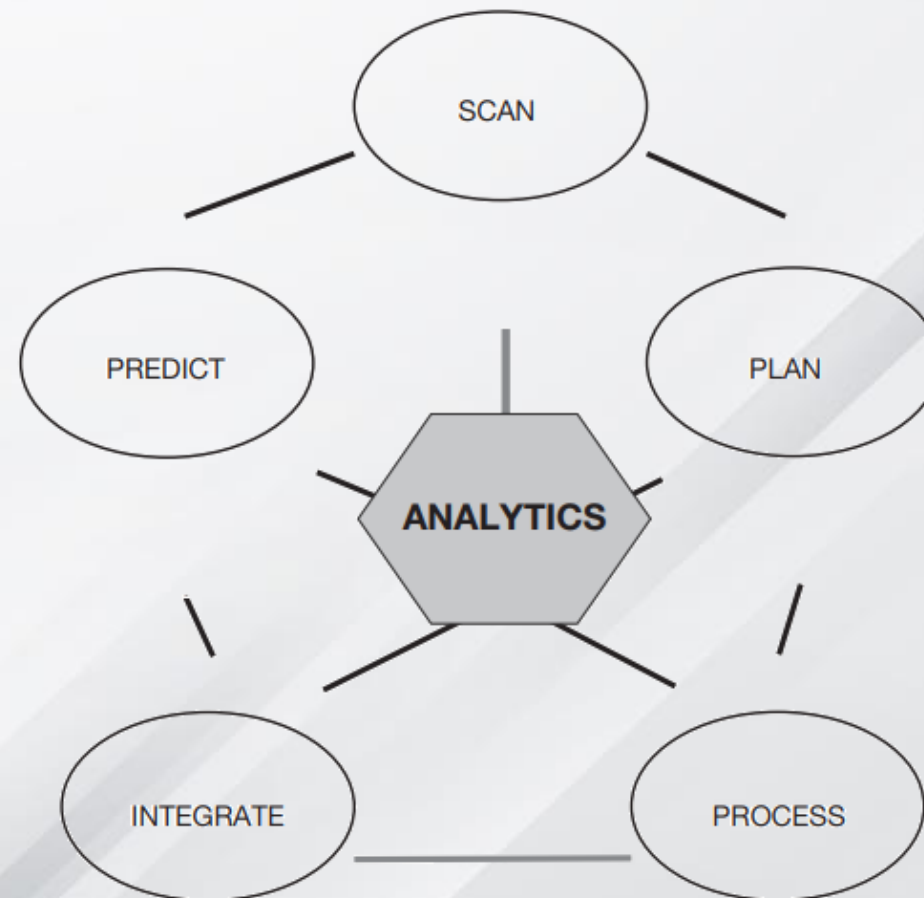
Barriers to Achieving a New Human Capital Management Approach

- The logic has always been there. Operationally, the barrier to HR change has been the weak alignment across functions relationships that were either never truly established or quickly broke down.
- Also, within units, services have not been integrated well.
- Siloed subdivisions are inherently not only inefficient but also obscure natural connections and breed parochialism
- With predictive management, you have a tested, practical, strategic model and operating system.
- Making connections, finding value, and calculating return on investment are simple operations with HCM:21. Figure A.4 illustrates the concept.

Changing the Game Approach

Continually working on process improvements and making additional investments in disconnected software can only keep you far back in the pack. The only way to break out, take the lead, and drive top line growth

Figure A.4. Connections through statistical analysis.





Thank You