The Impact of HR Analytics on the Training and Development Strategy - Private Sector Case Study in Lebanon

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Abstract

This study investigated the impact of HR analytics on the training and development strategy of private organizations in Lebanon. It sought to test four hypotheses namely: There is a significant relationship between HR analytics use in large businesses and the development of employee skills; there is a significant relationship between HR analytics use in older businesses and the development of employee skills; there is a significant relationship between HR analytics use in large businesses and the retention of employees; and there is a significant relationship between HR analytics use in older businesses and the retention of employee. HR analytics has a significant influence on the development of employee skills and HR analytics has a significant influence on the development of HR training strategy. The study relied on a quantitative correlational research method with the help of an online questionnaire as the data collection instrument. A total of 302 respondents from the private sector in Lebanon returned valid responses to the questionnaire. The results validated each of the four hypotheses. They revealed that HR professionals rely on HR analytics to formulate employee development strategies. Data from HR analytics is used to predict potential outcomes of important HR and organization strategy decisions. In conclusion, the findings from this study imply that businesses should integrate HR professionals and HR analytics into the process of decision making and development strategy formulation.

Keywords: HR analytics, training and development, organizational development, HR professionals

1. Introduction

Among the features of the modern business environment is the presence of large amounts of data owing to the nature of the information age. The organization and interpretation of this data is a large task particularly because it is usually raw. The need to transform this data into useful information has resulted in the emergence and rapid growth of HR analytics. The ability and resourcefulness of HR have become major components of business success in an organization. Consequently, competing businesses are involved in a major battle for HR talent. To identify the best HR talent, various approaches and methods of evaluating the HR have emerged. This concept of evaluating, rating, and gathering intelligence on HR is known as HR analytics.

HR analytics has been labeled and defined in a variety of ways. Its labeling includes alternatives such as talent analytics (Spahic, 2015), predictive analytics (Bassi, Carpenter, & McMurrer, 2012), HR intelligence (Falletta, 2008), people analytics, and workforce intelligence (Spahic, 2015). It has been defined as a process that comprises workforce forecast models, data mining, and investment analysis (Davenport, Harris, & Shapiro, 2010) or as a "proactive and systematic process of gathering, analyzing, communicating and using insightful people research and analytics results to help organizations achieve their strategic goals" (Falletta, 2008). From this definition, the practices associated with HR analytics include; benchmarking, HR metrics, employee surveys, and selection research (Spahic, 2015). Kapoor and Kabra (2014) defined HR analytics as an "integration of relevant HR data from different sources, the performing of organizational and workforce analysis on this captured data and ultimately the gleaning of insights from the findings to shape decisions for better organizational performance." Bassi, Carpenter, and McMurrer (2012) perceived HR analytics as a process that applies an evidence-based approach to arrive at decisions on issues affecting human resource in a business.

According to Bondarouk, Ruel, and Parry (2017), most definitions of HR analytics have several common things. First, the definitions imply that HR analytics is not merely about metrics meant to evaluate the effectiveness or

efficiency of the human resource in an organization. Second, HR analytics comprise the integration of information from both within and outside of the organization. Third, it involves the use of information technology to gather, manipulate, and publish information. Finally, it involves linking human resource decisions to the overall objectives and performance of the organization.

Although studies investigating the application and impact of HR analytics on organizations have been conducted widely in the west, not much such research has been conducted in Lebanon or the Middle East in general. This research explores the impact of HR analytics on the training and development strategies of private organizations in Lebanon. Conducting this research will allow the identification of the best practices in HR analytics use and demonstrate the impact of HR analytics use on employee development and training as well as the organization's bottom line.

2. Literature Review

Past research has shown that the size of a business impacts heavily on the adoption of HR analytics (Miles, 2014; Vargas, 2015; Spahic, 2015). The main factor linked to this scenario is the ability of bigger businesses to avail the tools, resources, and data required to enable the adoption of HR analytics (Falletta, 2014; Vargas, 2015). Many new and small businesses lack the capabilities to adequately support the adoption of HR analytics. Fitz-Enz and Mattox (2014) linked the tendency of not adopting HR analytics by new, particularly smaller businesses, to their lack of prior exposure or knowledge about the analytics as well as the tendency of such businesses to feel comfortable with just quantitative data, such as the amount of sales and profit.

The poor adoption of HR tools by smaller businesses has also been linked to fear of metrics and discomfort with the level of statistics use associated with HR analytics (Vargas, 2015; Rafter, 2013; Giuffrida, 2013). Basically, smaller businesses are not willing or unable to invest in highly skilled HR professionals with the ability to appropriately apply HR tools. Sole proprietors in particular lack the financial knowledge and conviction to adopt HR tools or hire HR professionals and tend to be more comfortable with the use of quantitative data, which can allow the assessment of a business's profitability without adding much value to employee productivity, retention, satisfaction, or development (Fitz-Enz & Mattox, 2014; Bassi, Carpenter, & McMurrer, 2012). Alternatively, many small businesses do not perceive HR tools as a priority area of investment (Miles, 2014). The result is that smaller businesses miss out on many of the benefits of HR analytics that are enjoyed by larger businesses. These benefits include employee development, employee retention, and higher competitiveness and productivity (Chaturvedi, 2016; Sharma & Sharma, 2017).

Some of the commonly used HR metrics are shown in Figure 1. Although many businesses, particularly small ones lack formal HR analytics schemes, they still assess most of these metrics.

Figure 1. 14 HR metrics examples

Source: https://www.analyticsinhr.com/blog/14-hr-metrics-examples/

However, HR analytics has much more to it than just measurements and statistics. Additional capabilities of HR analytics, according to Coolen and IJselstein (2015), include provision of data on business perspectives, such as the

understanding of business challenges, and provision of information on HR perspectives, such as employee training needs. Table 1 shows some of the types of HR analytics.

Table 1. Types of human resource analytics

Type of HR analytics	Brief Description
Appraisal analytics	Evaluation of employee performances and the distribution of HR talent
Employee reward	Management of promotions and incentivization of employee performances
Talent inventory	An inventory of employee skills
Involuntary attrition	Involuntary termination is the employee's departure at the hands of the employer.

Source: Bag, 2016.

Many businesses analyze reports and data from HR analytics and use them to predict the future needs of the organization, including employee development needs (Fitz-enz & Matox, 2014). According to van den Heuvel and Bondarouk (2017), many employee developmental changes today are driven by advancements in HR analytics. HR professionals also rely on HR analytics to make future predictions and argue a case for certain strategic decisions (Bradley, 2017). Thus, HR analytics enables HR to become a strategic partner in organizational decision making. Studies on the impact of HR analytics have reported improvements in human capital management (Mihalcea, 2017), increased levels of employee productivity (Sharma & Sharma, 2017), higher return on human capital investment (Mihalcea, 2017), and workplace learning (Giacumo & Breman, 2016).

The automation of many aspects of HR, such as hiring, compensation, and performance metrics, has allowed HR departments to focus on more complex aspects of HR, such as obtaining intelligence on business rivals' human resource. Indeed, as Spahic (2015) argues, the concept of HR analytics is derived from the age-old practice of competitive intelligence, which involves obtaining information about business rivals, such as their strategies, HR resources capabilities, and technologies among others. Relying on competitive intelligence has allowed HR departments to make more meaningful contributions to the organization's bottom line. Findings from research imply that organizations that apply HR analytics tend to perform better than competitors by identifying talents of the workforce and innovation opportunities (Bondarouk et al., 2017).

In many private businesses, HR analytics are applied widely particularly in the intersection of accounting, operations, and marketing (Kapoor & Kabra, 2014). Private businesses rely on analytics to predict future employee training needs (Spahic, 2015). The evaluation of employee performances allows the strengths and weaknesses of individual employees to be identified. Plans can then be made to improve the skills and abilities of each individual employee. This way, HR analytics contributes both to the training and development of individual employees.

HR analytics contributes to the development strategy by aiding benchmarking whereby intelligence gathered about effective HR practices in other organizations is used to enhance an organization's HR practices. Additionally, the competitive nature of the modern business environment means that organizations can no longer obtain a competitive advantage from products or services alone. Instead, HR analytics can, according to Chaturvedi (2016), be used to differentiate an organization from its competitors and grant it a competitive edge. For instance, according to Spahic (2015), HR analytics can be used to predict employees' or customer defections to rivals, to predict the potential outcomes of every important decision taken by the organization, and to optimize consumer offerings thereby enhancing competitiveness. HR analytics also enhances organizational competitiveness and HR management by limiting costly HR investments, particularly those that cannot be empirically measured (Chaturvedi, 2016).

Advances in technology have resulted in the computerization of many aspects of HR. This has freed HR departments from focusing on some traditional aspects of HR, particularly transactional and administrative issues, and instead diverted focus to the enhancement of the roles and overall contribution of HR throughout the organization (Bradley, 2017). Thus, analytics allow HR to have a more prominent role in the formulation of organization-wide developmental strategies. The analytics aid employee development in several ways. They assist large organizations to find solutions to various issues affecting their human resource, such as the most ideal plan of compensation, the features of an organization required to attract and retain talent, and the metrics of determining promotions. Therefore, HR analytics help a business to transform regular descriptive information and numbers into meaningful outcomes (Sharma & Sharma, 2017).

By relying on analyzable data, HR can make a meaningful contribution to the generation of better decisions by an organization (Chaturvedi, 2016). Spahic (2015) reported that by overlooking past mistakes and instead focusing on predictive analytics, HR can be able to overcome past failures and mistakes, avoid repeating them in the future, and predict future outcomes. Analytics enable HR to manage future opportunities and risks (Sharma & Sharma, 2017).

Drawing from the findings in the literature review, the following null hypotheses and their alternatives are proposed.

Null Hypothesis ($H1_0$): There is no significant relationship between HR analytics use in large businesses and the development of employee skills

Alternative Hypothesis ($H1_a$): There is a significant relationship between HR analytics use in large businesses and the development of employee skills

Null Hypothesis ($H2_0$): There is no significant relationship between HR analytics use in older businesses and the development of employee skills

Alternative Hypothesis ($H2_a$): There is a significant relationship between HR analytics use in older businesses and the development of employee skills

Null Hypothesis ($H3_0$): There is no significant relationship between HR analytics use in large businesses and the retention of employees

Alternative Hypothesis ($H3_a$): There is a significant relationship between HR analytics use in large businesses and the retention of employees

Null Hypothesis ($H4_0$): There is no significant relationship between HR analytics use in older businesses and the retention of employees

Alternative Hypothesis ($H4_a$): There is a significant relationship between HR analytics use in older businesses and the retention of employee

3. Research Methodology

This study relied on a quantitative, correlational research methodology. This design was chosen because this study involves the examination of relationships between variables as well as statistical and interpretational analysis (Offredy & Vickers, 2010). The study sought to describe the impact of HR analytics on the training and development strategies of private organizations in Lebanon. Consequently, making it a good fit for a quantitative, correlational analysis. Only private businesses that applied HR analytics were invited to participate in the study.

This study was based on primary data, which was collected from 302 valid respondents. The selected sample size also meets the general rule of sample size justification, which calls for 10 to 30 respondents for each independent variable (Fawcett & Garity, 2008). Random sampling was conducted, and the primary data was collected using structured questionnaires that were sent to the targeted respondents through email. An online questionnaire survey was
developed at KwikSurveys.com which is a free to use online survey builder and the link to
the survey shared in the emails sent to the respondents.

The design of the questionnaire was based on the research hypotheses and findings from previous research in this area. The research instrument was subjected to a pilot study whereby its validity, relevance, and suitability to the research under question was evaluated by HR professionals well versed on analytics. The feedback from the pilot test was used to improve the overall quality of the questionnaire. The suggestions made during the pretest and field test were incorporated into the design and structure of the questionnaire used in the current study.

An email inviting responses was distributed to the sample research population formally inviting them to participate in the study via a link to the online questionnaire that was attached to the email invite. The invitation letter explained the purpose of the research as well as its confidentiality and privacy policies and required the participants to consent to participating by responding with a confirmation message to the invite. As the questionnaire was self-administered, it was vulnerable to the common method variance concern. Common method variance refers to the "variance shared by different variables that is attributed to sharing a common method" (Buchanan & Bryman, 2009). According to Buchanan and Bryman, self-administration of the same questionnaire can lead to "inflation of correlations among items and scales" making it difficult to identify whether the correlation is caused by the relation between the variables or constructs being studied, the common method variance or both. To limit the effects of the common method variance, procedures adopted by Aldosari et al. (2016) were used including notifying respondents that their

answers and identities would be treated with confidentiality and all their answers, particularly in the open-ended questions section, would be acceptable.

The online questionnaire remained open for a month and weekly reminders were sent to participants to remind and encourage them to participate. The collected data was analyzed using SPSS V24 to produce descriptive statistics and correlations. The hypotheses were tested using bivariate correlation test to establish whether there existed a relationship between the independent and dependent variables.

4. Results

The email invites for participation in the online survey were sent to over 1,000 HR professionals in Lebanon. Ultimately, a total of 302 valid responses were received. The demographics for the respondents are shown Tables 2-5 below.

Table 2. Gender descriptive

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Gender	Female	129	43	43	43
	Male	173	57	57	100.00
Total		302	100.0	100.0	

Table 3. Age of organization

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Age of Organization	1-2 years	100	33	33	33
	3-5 years	70	23	23	56
	6-10 years	14	5	5	61
	Less than one year	51	17	17	78
	Over 10 years	67	22	22	100.00
Total		302	100.0	100.0	

Table 4. Number of employees

Value Label	Value	Frequency	Percent
Number of Employees	10 – 50	113	37
	51 – 100	58	19
	101 – 250	2	1
	251 – 500	57	19
	Over 500	72	24
Total		302	100.0

Table 5. Number of years HR analytics has been used in organization

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
How many years has your business used HR analytics?	1-2 years	84	28	28	28
	3-5 years	89	29	29	57
	6-10 years	18	6	6	63
	Less than one year	78	26	26	89
	over 10 years	33	11	11	100.00
Total		303	100.0	100.0	

Most of the respondents (57%) were male and from organizations with between 10 – 50 employees. Most of the businesses were 3–5 years old. Findings indicate that older businesses applied HR analytics more widely than younger businesses. Additionally, businesses with more employees (over 100 employees) used HR analytics more than businesses with fewer employees (less than 100). For larger businesses that have been around for many years, HR analytics is an essential tool for remaining competitive and evaluating the performances of the many employees attached to them. Respondents from these businesses indicated that HR analytics was useful in managing various HR aspects, including recruitments, promotions, appraisals, as well as limiting employee turnover rates. For the larger and older companies, HR analytics was an important tool of planning employee training and development. 100 % of businesses older than 10 years indicated that HR analytics had helped in employee development and retention. HR analytics was also an important tool of employee management with 56 % of respondents in businesses over 10 years old indicating that HR analytics had helped in reducing the employee turnover rate. Interestingly, younger businesses and those with less than 100 employees indicated that HR analytics had not been influential in employee development or retention. 57 % of businesses between 1 and 2 years old indicated that HR analytics had no influence on employee development while 59 % of those less than one year old made a similar claim.

The results of the bivariate correlations to test the hypotheses are shown in Tables 6 and 7.

Table 6. Bivariate correlation results

		Age of Organization	HR analytics has enhanced employee retention	HR analytics has enhanced employee development
Age of Organization	**Pearson Correlation**	1.00	.76	.77
	Sig. (2-tailed)		.000	.000
	N	302	302	302
HR analytics has enhanced employee retention	**Pearson Correlation**	.76	1.00	.97
	Sig. (2-tailed)	.000		.000
	N	302	302	302
HR analytics has enhanced employee development	**Pearson Correlation**	.77	.97	1.00
	Sig. (2-tailed)	.000	.000	
	N	302	302	302

*Correlation is significant at the 0.05 level (2-tailed)

Table 7. Bivariate correlation results

		HR analytics has enhanced employee retention	HR analytics has enhanced employee development	No of Employees
HR analytics has enhanced employee retention	**Pearson Correlation**	1.00	.97	.75
	Sig. (2-tailed)		.000	.000
	N	302	302	302
HR analytics has enhanced employee development	**Pearson Correlation**	.97	1.00	.79
	Sig. (2-tailed)	.000		.000
	N	302	302	302
No of Employees	**Pearson Correlation**	.75	.79	1.00
	Sig. (2-tailed)	.000	.000	
	N	302	302	302

*Correlation is significant at the 0.05 level (2-tailed)

For a Sig. (2-tailed), a value less than 0.05 implies that the correlation is statistically significant (Dytham, 2011). Thus, Interpretations based on the correlation figures above imply that the impact of HR analytics on employee development and retention is influenced by both the size and age of a business. This proves the four hypotheses as true. The fact that all correlation values are positive implies that the relationship between the variables is positive. This implies that the more a business grows and the older it becomes, the more likely it is to benefit from HR analytics to develop and retain its employees.

Reliability Test

To ensure the reliability of the questionnaire, pre-test or pilot tests were conducted prior to the collection of the final data. The pilot tests were conducted on 10 respondents from four organizations that were randomly selected within Lebanon. The pilot tests were meant to identify and remove ambiguities from the questionnaire and enhance their clarity. The responses obtained from the 10 respondents in these pilot tests were integrated into the final questionnaire design to ensure its reliability. The inter-variable consistency of the survey questionnaire was tested using Cronbach Alpha. Cronbach Alpha measures the internal consistency reliability of a set of variables. The Cronbach Alpha for this study was identified as 0.95 as shown below in Table 8.

Table 8. Cronbach's Alpha Test

Cronbach's Alpha	Number of Items
0.95	6

A value of Cronbach's Alpha that is greater than 0.7 implies that the data has high reliability (Khosrow-Pour, 2013). Thus, considering the Cronbach's Alpha value in this case is 0.95, the implication is that the measurement tool used in this research had high reliability.

Table 9. The one-sample Kolmogorov-Smirnov test – normal distribution

		v2.	**v3.**	**v4.**	**v6.**	**v7.**	**v8.**	**v10.**
N		**302**	**302**	**302**	**302**	**302**	**302**	**302**
Normal Parameters	Mean	2.82	2.55	2.48	2.55	2.54	2.01	1.50
	Std. Deviation	1.38	1.38	1.24	.95	.97	.94	.50
Most Extreme Differences	Absolute	.22	.26	.19	.27	.23	.22	.34
	Positive	.22	.26	.19	.17	.16	.22	.34
	Negative	-.16	-.15	-.12	-.27	-.23	-.15	-.34
Kolmogorov-Smirnov Z		3.89	4.59	3.26	4.61	3.99	3.82	5.95
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000

Table 10. The one-sample Kolmogorov-Smirnov test - uniform distribution

		v2.	**v3.**	**v4.**	**v6.**	**v7.**	**v8.**	**v10.**
N		**302**	**302**	**302**	**302**	**302**	**302**	**302**
Uniform Parameters	Minimum	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Maximum	5.00	6.00	5.00	4.00	4.00	4.00	2.00
Most Extreme Differences	Absolute	.25	.41	.33	.25	.21	.37	.50
	Positive	.25	.41	.33	.19	.18	.37	.50
	Negative	-.22	.00	-.11	-.25	-.21	-.07	-.50
Kolmogorov-Smirnov Z		4.34	7.11	5.75	4.33	3.70	6.46	8.75
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000

Table 11. The one-sample Kolmogorov-Smirnov test - poisson distribution

		v2.	v3.	v4.	v6.	v7.	v8.	v10.
N		**302**	**302**	**302**	**302**	**302**	**302**	**302**
Poisson Parameters	Lambda	2.82	2.55	2.48	2.55	2.54	2.01	1.50
Most Extreme Differences	Absolute	.30	.30	.29	.35	.36	.40	.56
	Positive	.07	.08	.07	.12	.11	.07	.19
	Negative	-.30	-.30	-.29	-.35	-.36	-.40	-.56
Kolmogorov-Smirnov Z		5.14	5.14	5.05	6.12	6.18	7.02	9.67
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000

Table 12. The one-sample Kolmogorov-Smirnov test - exponential distribution

		v2.	v3.	v4.	v6.	v7.	v8.	v10.
N		**302**	**302**	**302**	**302**	**302**	**302**	**302**
Exponential Parameters	Scale	2.82	2.55	2.48	2.55	2.54	2.01	1.50
Most Extreme Differences	Absolute	.94	.92	.92	.92	.92	.87	.78
	Positive	.00	.00	.00	.00	.00	.00	.05
	Negative	-.94	-.92	-.92	-.92	-.92	-.87	-.78
Kolmogorov-Smirnov Z		16.34	16.02	15.93	16.02	16.00	15.04	13.51
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000

In the One-Sample Kolmogorov-Smirnov Test results for normal, uniform, exponential, and poisson test distributions shown in Tables 9-12, the asymptotic significance values are zero, which is less than 0.05 making them statistically significant. The implication is that the variables do not follow normal, uniform, exponential or poisson distribution and the null hypotheses are thus rejected (Yakir, 2013).

5. Discussion

HR analytics is a concept that is less than two decades old. Understandably, its adoption is still at infancy. Nevertheless, the rate at which organizations, particularly in the private sector, have been adopting the concept has been remarkable. Having emerged in the west, the concept has been widely implemented by private organizations in the developed countries. However, the private sector in the Middle East has also been increasingly adopting HR analytics. This paper explored the impact of HR analytics on the training and development strategies of the private sector in Lebanon.

The findings indicate that most large private sector organizations in Lebanon apply HR analytics. From the results, older organizations with more employees utilize HR analytics for employee development and training purposes than younger organizations with fewer employees. The larger organizations relied on HR analytics as an employee management tool. These findings add to the existing knowledge on importance of HR analytics and can help businesses, particularly small and newer ones, to understand the benefits that analytics bring to a business.

HR analytics allow HR professionals to assess HR practices and outcomes over time thereby facilitating the review of employees' training and development needs. With HR analytics, HR managers can gather the data required to track the performances of employees. HR analytics also allows record keeping and such data can be studied over time to establish the potential reasons for current levels of performance and what can be deduced from the past data to enhance future performances. In general, HR analytics is an invaluable tool for all businesses, small and large alike.

6. Conclusion and Recommendations

Lebanon is considered one of the top countries in middle-east that consider technology as priority, but this consideration is not translated into massive actions or tangible results. Organizations and especially SMEs not focusing in HR analytics and this matter will increase turnover rate and the quality of the HR decision making.

The authors recommend some actions to be taken:

- SMEs should start implementing HR analytics by using specific software and qualified people
- Organizations should acquire high competent data analytics talents to manage the data analysis
- HR analytics will enhance HR effectiveness and decrease turnover rate, so organization must transfer the target operating model to the data driven methodology
- All training plans and promotions and people competencies assessment should be based on data analysis and specific measures and based on subjective judgment
- Organizations must apply employees KPIs on all level to mitigate risks from low performers

7. Further Research

The findings from this study demonstrate the importance of comprehending the factors associated with the adoption of HR analytics as well as the factors influencing the effectiveness of HR analytics. However, the results imply that many young businesses with few employees have not yet grasped the importance of HR analytics or perhaps they lack the capacity or knowhow to apply them. Thus, future research should focus on this area to produce results that can guide smaller businesses on how they can optimize their human resource for the best outcomes in terms of organizational strategy and development. Also, future research should focus on the implementation of HR analytics in the public sector, higher education and Nonprofit organizations in Lebanon.

8. Limitations

This study had several limitations. The first is the small size of the sample and its restriction to one country, which made it homogenous and less ideal for generalization to a bigger population. The study was also limited by its reliance on a self-administered online questionnaire, which weakened its validity and reliability. A larger and more representative sample in future research would increase the reliability of results and allow a more reliable generalization of findings. Additionally, the research design can be developed further by using interviews in future research, which, according to Wissmath, Weibel and Mast (2010), would allow interaction with study participants, thereby enhancing the overall judgment of the researcher.

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