

Use of ePortfolios for making hiring decisions: a comparison of the results from representatives of large and small businesses

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Abstract

Purpose – The purpose of the study was to determine if representatives of small and large businesses in New Jersey believe portfolios would be valuable for evaluating applicants as part of the hiring process and whether portfolios would help applicants in the hiring process.

Design/methodology/approach – Representatives from 109 small and 71 large businesses in New Jersey were surveyed about using portfolios in the hiring process.

Findings – Representatives from both small and large businesses believe that the submission of a portfolio of exemplary work may help the applicant and the employer in the hiring process.

Research limitations/implications – The study limitations are that the respondents had different definitions of ePortfolio, it was a convenience survey, and the researchers used two sets of data. For future research, conducting a study in a major region of the world would be a significant contribution to learning about the views of business representatives globally regarding the use of ePortfolios in the hiring decision process.

Practical implications – The authors recommend that educational institutions encourage students to create portfolios as part of their career preparation to gain an edge as applicants in the job market. EPortfolios are an emerging tool to help employers in the hiring decision process.

Social implications – EPortfolios would provide evidence of the employee's fit to the position, thus eliminating a mismatch of the employee's skill set and qualifications to the job. The ePortfolio aids the employer in seeing the candidate's skills for the position.

Originality/value – This paper adds to the limited research about the emergence of ePortfolios having a role in human resource decision making.

Keywords ePortfolio, Job applicants, Employers, Workplace skills, Hiring, Recruitment

Paper type Research paper

Introduction

With the emphasis on workforce readiness to foster economic growth, college graduates need to be prepared to demonstrate that they have acquired the skills, competencies, and knowledge for the global workplace's demands. To demonstrate these proficiencies, the electronic portfolio (ePortfolio) platform gives students the flexibility to have digital presentations of their work that can be updated and adapted over time for different audiences such as prospective employers (Ciesielkiewicz, 2019).

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Electronic portfolios are digital repositories of student work and may include research papers, certificates, reports on projects and teamwork, or internship experiences (Lievens, 2015). As part of this flexibility, ePortfolios can also be adapted to be culturally specific within the global environment. This flexibility is noted in the case studies by Ciesielkiewicz *et al.* (2019) on the use of ePortfolios in Master of Education programs at Harvard University, Sookmyung Women's University, and Villanueva-Complutense University of Madrid, which discuss the successes, challenges, and culturally specific elements of the ePortfolios. The ePortfolio could be a viable addition in international recruitment and hiring since many careers are becoming more globally oriented (Ring *et al.*, 2017).

As more human resource management (HRM) systems adopt digital platforms, paper resumés are becoming a less popular way to assess an applicant's fit in an organization's culture (Watty and McKay, 2016). For example in the Spring 2021 issue of *HR Magazine*, Gensing-Pophal (2021) discussed the innovative tactics for employee recruitment during a pandemic. Included in this article were references to use of technology in hiring including virtual fairs, the use of Zoom, and asking candidates to submit video presentations of their work such as selling a product. Also included was the use of Loom, a video-messaging tool that allows candidates to send two-minute introductory videos, similar to presenting an elevator pitch, that has the candidates introduce themselves to employers. These electronic formats lend themselves to the ePortfolio platform and highlight how technology is introduced in the current HRM function. According to Smith (2019) and O'Connell (2019) technologies in global business settings will affect business leaders, HR personnel, workforces, and managers. Both college graduates and employers are noting the shift in moving from old habits and adding new approaches as a younger, tech-driven generation of workers and managers become dominant in businesses (O'Connell, 2019).

College graduates coming from programs that emphasize workforce readiness are of high interest to HRM staff but need to demonstrate that they possess the knowledge and skills required to thrive in a diverse and competitive work environment (Community Tool Box, 2016; Batson, 2015). In addition, during the Covid and Post-Covid environment, employers are looking for people who are comfortable with taking the initiative, who display self-awareness and expert communication skills (Steinberg, 2020). These skills and competencies can be demonstrated through video and project-based artifacts within the ePortfolio and linked within the resume. As stated in Watty and McKay (2016), the next generation are digital natives, familiar with the use of technology and should be provided with the use of ePortfolios as an option to highlight their knowledge and skills when applying for jobs. Also, Leahy and Filatrault (2017) noted a high level of interest in the development and advancement of portfolios from millennial recruiters. It turned out that these younger human resource recruiters were more accustomed to viewing ePortfolios using a digital platform because they grew up using technology. Whereas employers with recruitment experience of 10 or more years were not as comfortable using technology to view ePortfolios (Leahy and Filatrault, 2017). Moreover, research indicates that younger recruiters were more willing to try various recruitment strategies to gain more information about job candidates. Leahy and Filatrault (2017) suggest that organizations may need to train seasoned human resource managers to develop a better understanding surrounding the benefits of using ePortfolios in the recruitment process. One of these benefits is that ePortfolios are an important addition that supplements the traditional resume by providing a way for employers to review the diversity, breadth, and quality of graduates' work and students' academic achievements and training (Batson, 2015; Herring and Notar, 2011; Watty and McKay, 2016).

The flexibility of ePortfolios allows an array of digital media types, such as audio, video, text, and graphics (Kahn, 2014; Leahy and Filatrault, 2017; McMillan *et al.*, 2014; Olson and Klein-Collins, 2014; Yancy, 2009). The use of ePortfolios to demonstrate students' achievements, skills, and competencies is known within academic institutions as part of

assessment programs. As the graduates enter the job market with their ePortfolios, more employers will become aware of the role that the ePortfolios have in the recruitment and hiring phases of Human Resources. According to a 2013 survey by EDUCAUSE, 57% of US postsecondary institutions reported some use of ePortfolios, and 53% stated that their students had utilized an ePortfolio in at least one class in the past year. This represents a sharp increase in ePortfolio use since 2010, as employers and instructors alike recognize the importance of digital platforms for demonstrating student learning and job readiness (Hart Research Associates, 2013; Cai, 2012).

With the impact of Covid on the human resources functions within organizations, more employers shifted to virtual recruiting and hiring. As part of this move, employers use virtual interviews, online communication, collaboration tools, video, texting, chat boxes, artificial intelligence, and virtual job fairs (Steinberg, 2020; Maurer, 2020). Based on the integration of these technology tools and learning from the process, “. . .the virtual candidate experience is going to be a focus going forward” (Maurer, 2020). With these technological changes continuing after Covid that influence hiring, the environment is aligned for students to use ePortfolios “. . . to compile, organize, and formulate a digital presentation across various types of media. . .” (Ciesielkiewicz, 2019).

To add to the research about the use of ePortfolios as part of the hiring process, this study surveyed recruiters and HRM professionals from 109 small and 71 large companies in New Jersey to determine attitudes around the value of ePortfolios as part of the hiring process.

Review of literature

Although ePortfolios are increasingly part of higher educational experiences, many professionals are unfamiliar with ePortfolios. An ePortfolio is a digitized collection of artifacts related to the owner’s professional and academic accomplishments, including demonstrations, resources, and awards. EPortfolios showcase the breadth of student work across multiple formats and allow students to contextualize their learning beyond what is possible in a GPA or resumé (Batson, 2015; Lorenzo and Ittelson, 2005). In addition, an ePortfolio provides a space for students to continuously document and reflect on their progress (Bair *et al.*, 2019). EPortfolio software programs, such as Digication, Portfolium, and free or low-cost sites like Google Sites or WordPress, allow students to create and maintain dynamic portfolios over the course of their education, incorporating powerpoints, videos, podcasts, and documents, to illustrate the skills and concepts learned in the various artifacts within the ePortfolio. Even though these files might be stored on thumb drives, ePortfolios are most effective when available over the web, hosted on the student’s college website or an independent site.

Mutual benefits of ePortfolios to students and employers

Employers are looking for applicants with appeal beyond grades; they want someone who will fit the organization’s culture and has a broad range of generic workplace skills that are difficult to assess through a transcript. This process is particularly evident in assessments of business graduates, where an ePortfolio complements the transcript and resumé as a “tool . . . to enhance the employability, career development and professional identity of business graduates” (Watty and McKay, 2016).

Employers recognize that learning often occurs in many aspects of an individual’s life, both through formal and informal settings (Olson and Klein-Collins, 2014). This learning can come from the classroom, military experiences, internships, student organizations, and family and volunteer work. The ePortfolio provides a structured site for students and others seeking employment to showcase work completed as part of their academic and life

experiences and showcase their learning fostered through co-curricular activities and workplace experiences. According to [Ferns and Comfort \(2014\)](#), employers have increasingly expressed their interest in potential employees to demonstrate “soft skills” such as communication, critical thinking, and teamwork. These soft skills are perceived as vital in the workplace and cannot be assessed on academic transcripts. Typically these skills are demonstrated within the classroom setting or through assessments, including writing assignments, video productions of case scenarios by students, and oral presentations as examples.

Students, in turn, find that ePortfolios are a useful way to showcase their personal and professional growth over the course of their learning within the structure provided by their instructors and institution. Many professional courses of study include the finalization of an ePortfolio as part of a capstone course, drawing from assignments and experiences over the entire program. This process not only produces a valuable job-seeking tool, it also encourages the student to engage in meaningful reflection of their learning career; “by scaffolding artifacts that will ultimately be included in the final product, the student is allowed time to reflect, select, and arrange the ePortfolio in a meaningful way” ([Chatham-Carpenter et al., 2010](#), p. 53). This process of reflection, in turn, gives them greater insight into how they want to market themselves during the job-seeking process ([Feather and Ricci, 2014](#)). Finally, the dynamic nature of an ePortfolio enables students to tailor it to the positions for which they are applying, putting greater emphasis on the products and skills that are most relevant to their desired field. With more resumes being posted online, adding links in the resume to artifacts within the ePortfolio provides value-added information about the applicants’ experiences.

Existing data on employers and ePortfolios

There have been few quantitative studies of the efficacy of ePortfolios in improving the chances that an applicant will be hired or in increasing the likelihood of finding and hiring exemplary candidates. In a 2013 survey of the Notre Dame Career Center Advisory Board, made up of recruiters from international corporations (AT&T, Accenture, Boeing, General Mills, General Electric, Johnson and Johnson, P&G, and Stryker), 91% reported that they would visit an ePortfolio link provided by a student, with lesser levels of interest and engagement with ePortfolios through email, or as a clickable link on a resumé or email signature ([Ambrose, 2013](#)).

Beyond just looking at an ePortfolio, how do employers use it to make decisions about candidates? A study of Taiwanese H.R. Managers ([Yu, 2012](#)) found that for some, the ePortfolio is a way to screen candidates between resumé assessment and an in-person interview, while for others, it can tip the balance toward a candidate in the final decision phase. This suggests that employers develop their own methods and stages in the recruitment timeline when ePortfolios are most useful. Yu concluded that there was a high and consistent level of interest in ePortfolios as a part of the hiring toolkit and that, when provided with instruction on how best to incorporate it, hiring managers favored using them.

A study that sought to solicit attitudes on the utility of ePortfolios in business recruitment in Australia, found that the majority of employers did not have prior knowledge of ePortfolios, but saw their potential. Recognizing that the next generation(s) of employees are digital natives, many respondents acknowledged that a digital platform like an ePortfolio was a viable way to assess specific skills and to get a “feel for the person” they are considering ([Watty and McKay, 2016](#)). Employers’ enthusiasm for ePortfolios was tempered by the lack of familiarity with them and suggests that these digital platforms continue to supplement, rather than replace, more traditional hiring tools.

Another study of Spanish human resource directors by [Ciesielkiewicz et al. \(2020\)](#) found that 57% of the human resource directors surveyed said they would review the ePortfolios of all the applicants, while 86% of human resource managers would review the top three candidate's ePortfolios, and 76% would review the ePortfolio for the best candidate. The study demonstrates that a higher percentage of human resource managers are willing to review the top three candidates and top candidate's portfolio than every candidate's portfolios. In another study by [Ciesielkiewicz Villanueva-Complutense et al. \(2020, p. 116\)](#) with principals in Poland and Spain, 67% of the principals in Poland and 78% in Spain said they would review the ePortfolios of the top candidate. Nearly all respondents were willing to review the ePortfolios of the top three candidates ([Ciesielkiewicz Villanueva-Complutense et al., 2020](#)).

A leading national study, periodically conducted with American universities and colleges, is done by the Association of American Colleges and Universities (AAC&U). This study helps guide university personnel in addressing what the employers view most important in terms of knowledge, skills, and abilities of college graduates. In the AAC&U report ([Finley, 2021](#)), university personnel are encouraged to conduct their own studies on the skills that matter most to local and regional employers, review the curricula and co-curricular offerings, and to assess students' progress at the beginning, middle and end of their college experiences. Documentation of students' progress and attainment of the skills can be done through use of ePortfolios which is advocated for in the report ([Finley, 2021](#)).

In addition to the American study, the varied case studies and examples on ePortfolio use from the United Kingdom are presented in the guide *How to Enhance Student Learning, Progression and Employability with Eportfolios: Case Studies and Guidance on e-Portfolios for UK Further and Higher Education*. This guide provides higher education personnel with ideas and examples of the incorporation of ePortfolios within the curricula. In addition, the research by [Joyes et al. \(2010\)](#) discusses the background of the Joint Information System Committee (JISC) in the UK regarding JISC's approach to highlighting the learning and implications for ePortfolio practice.

Adding to these studies is the research done recognizing the international perspectives on the use of e-Portfolios in higher education with case studies from Asia, North America, and Europe ([Ciesielkiewicz et al., 2019](#)). The study analyzes the success factors of ePortfolio use in three different universities within Master of Education Programs and frames the work with reference to Hofstede's Cultural Dimensions. From this study, "...the exploration of different perspectives can help to develop a common understanding of the uses, benefits, and potential of ePortfolios in higher education" ([Ciesielkiewicz et al., 2019, p. 96](#)).

Methodology

Research questions and sampling

Surveys are a commonly used method by human resource managers to collect data ([SHRM, 2021](#)). Human resource managers administer surveys to determine what business strategies are effective ([SHRM, 2021](#)). The results of the survey can reveal what human resource practices work best. Surveys are an effective tool to communicate information to employers. Employers can use surveys to communicate with people both inside or outside the organization to learn about the effectiveness of their human resource practices. Respondents to surveys can be anonymous and therefore be more honest in their opinions.

In this study, the researchers were interested in the extent to which New Jersey employers currently use ePortfolios and employers' opinions regarding the value of portfolios. In particular, the researchers were seeking data on whether employers see portfolios as a way to differentiate applicants and, if so, how valuable they are in the hiring process. In this study the term "portfolio" was used in the survey questions; the general term "portfolio" may

resonate more with the employers than the term “ePortfolios”. There was a statement on the survey that said, “Portfolios that represent a compilation of students’ best work within their majors/studies are being incorporated into the graduation requirements at many colleges.” This statement appeared before the respondents read the survey questions.

In developing the survey methodology, the researchers constructed the following research questions and related hypotheses (Table 1):

From these research questions, the researchers developed three survey questions to disseminate to our sample:

- (1) Does your company encourage job applicants to submit a portfolio of their work as part of the hiring process?
- (2) Do you think the submission of a portfolio of exemplary work may help the applicant in the hiring process?
- (3) Do you think the submission of a portfolio may be beneficial for you as an employer in the hiring process?

The respondents answered yes, no, or don’t know to the survey questions.

The sample for this study was developed in May 2015, beginning with a list of potential contacts derived from the *N.J. Biz Book of Lists*, a leading state business journal. The contacts for this study were derived from the following lists: Large-Sized Companies, Medium-Sized Companies, Business, and Professional Associations, City and County

Research question	Hypothesis
1 Do only a minority of employers encourage job applicants to submit portfolios?	Only a minority of employers would encourage job applicants to submit portfolios. We based this hypothesis on the study results by Ward and Moser (2008) that showed the use of ePortfolios was low by human resource managers
2 Do the majority of employers say portfolios are useful to applicants?	The majority of employers would say portfolios are useful to applicants. EPortfolios provide evidence of an applicant’s soft skills such as communication, teamwork, critical thinking, and problem-solving (Fern and Comfort, 2014 , pp. 271–272), giving them an advantage over other applicants because they are demonstrating skills that employers desire
3 Do the majority of employers say portfolios may be beneficial to them in the hiring process?	The majority of employers would say that portfolios would be beneficial to them in the hiring process. The researchers based this hypothesis on the study by Hart Research Associates (2013) that stated more than four in five employers would find ePortfolios useful in the hiring process for assessing a candidate’s skills
4 Do the responses to RQ2 and RQ3 differ by the answer to RQ1?	Organizations that encouraged job applicants to submit portfolios would be more likely to say that portfolios benefited the applicant and that the portfolio was useful to the employer. If an employer is going to take the time to review a portfolio, it would be reasonable for them to do so because they find it beneficial for the hiring process and the applicant
5 Do the responses to all three questions differ by small versus large employers?	There would be no difference in portfolios’ perceived usefulness to the applicants and employers between small and large organizations

Table 1. Research questions and corresponding hypotheses

Business Resources, Economic Development Authority Direct Leaders, Economic Development Organizations, MBA Programs, Nonprofit Organizations, Public Relations Firms, Radio Stations, Small Business Development Centers, State Departments and Agencies, and Urban Developers. These lists were chosen because they were deemed the types of businesses most likely to hire college graduates, unlike dry cleaners or hair salons. Therefore, this type of sampling is a quota sampling which means the companies met the required criteria to participate (Babbie, 2010). Even though our sample is limited to New Jersey businesses, the diversity and scale of New Jersey businesses make data and conclusions from this study applicable in various contexts. While this is not a random sampling, which has less sampling error and more generalizability, because there were 36 industries represented, this helps to increase external validity. Thus, the researchers have attempted to increase generalizability of the findings of the sample to the population to the best of their ability and available resources.

The researchers' mode of survey delivery was an online survey (Crowles and Nelson, 2015). Surveys administered online are more likely to have sensitive questions answered truthfully (Crowles and Nelson, 2015). This method of administration reduces the social desirability response bias because respondents do not feel pressured to choose the socially desirable answer (Crowles and Nelson, 2015)

With the support of the William J. Hughes Center for Public Policy and the Stockton Polling Institute, the 484 companies from these lists who had provided email contacts received the survey questions through email (Constant Contact or direct email). Constant Contact was used to follow-up with nonresponders to reduce sampling bias. This resulted in 109 completed surveys, all from businesses with fewer than 1,000 employees. To reduce sampling bias from having almost all of the respondents from small businesses, the researchers hired Research America, a professional data research company, to collect data from hiring managers from mid-to large-size businesses (over 1,000 employees) during August 2015. The final sample consisted of 109 responses from *N.J. Biz Book of Lists* and 71 responses from Research America, for a total of 180 responses.

The Hughes Center and Research America helped the researchers with data collection. The Stockton Polling Center is a part of the Hughes Center. A research assistant from the Hughes Center helped the researchers collect the data. Since the Hughes Center is a part of the researchers' university, they had to abide by the ethical standards for data collection of the Institutional Review Board. The data collection was the only role the Hughes Center was involved in the study. The researchers did not set out to influence policy. The purpose of the research was to determine employer's opinions about whether portfolios help job applicants, as well as the employers, in the job search process.

Research America is a market research company that provides quantitative and qualitative market research for clients. They have acquired 14 companies in business for over 35 years and operate in 14 cities in the United States. The Green Book Research Industry Trends Report (GRIT) named Research as America as one of the top 50 companies within their first five years (Research America, 2021a). Research America's clients include Coca-Cola, eBay, Starbucks Coffee, Proctor and Gamble, Pfizer, Microsoft, and Amazon (Research America 2021b). The university's Institutional Review Board approved Research America for data collection.

Table 2 lists the participants by industry and business size. There were 36 industries represented. The industries that had five or more respondents were accounting (6), advertising (5), architecture (6), construction (5), education (13), engineering (13), finance (5), health and wellness (8), healthcare (8), hospitality (18), information technology (9), insurance (8), manufacturing (10), nonprofit (7), pharmaceutical (10), and telecommunications (7). The highest number of respondents (83) from the total sample of 180 businesses were from businesses with 0–49 employees, followed by businesses with over 4,000 employees (44).

Industry	0–49	50–99	100–499	500–999	1,000–1,999	2,000–2,999	3,000–3,999	4,000+	Grand total
Accounting	6								6
Advertising	5								5
Architecture	6								6
Banking								2	2
Construction	4		1						5
Design		1							1
Economic development	1								1
Education				1	4	1	2	5	13
Engineering	5		1			1		3	10
Entrepreneur	1								1
Environmental	4								4
Equity theater	1								1
Finance	4	1							5
Food service		3						1	4
Government					2	2	1	3	8
Health and wellness				1	1	1			3
Healthcare	1	1	1		3		1		7
Historical society/ museum	1								1
Hospitality	11	2	4		1				18
Human resources	3								3
Information technology	4							5	9
Insurance	3		1					4	8
Manufacturing	4	1				1	1	3	10
Mortgage bankers and brokers								1	1
Nonprofit organizations	4		2		1				7
Pharmaceutical	1	1			1			7	10
Public relations	1								1
Publishing				1				1	2
Real estate	1		1						2
Recycling and waste management		1							1
Retail and wholesale	5				1			1	7
Research centers								1	1
Small business	6							1	7
Social service	1	1							2
Telecommunications					2			5	7
Transportation								1	1
Grand total	83	12	11	3	16	6	5	44	180

Table 2.
List of participants by industry and business size

Data analysis method

After the researchers collected the data, they tabulated it in Excel files. The researchers calculated the percentage of yes and no responses to each question. The researchers did not count the “don’t know/not sure” answers as part of the useable responses.

The researchers performed a one-tailed z test of population proportions (see, for example, [Bluman, 2018](#)) to determine if the number of yes answers to Question 1 was less than 50%. Also the performed a one-tailed z test of population proportions to determine if the number of yes answers to Questions 2 and 3 were over 50%. The “don’t know/not sure” answers were not counted as part of the useable responses.

The researchers hypothesized that organizations that encouraged job applicants to submit portfolios would say that portfolios benefited the applicant. Those organizations

would also find that portfolios were beneficial to the employer. The researchers performed one-tailed z tests to test the difference in proportions of two independent samples (Bluman, 2018) to test this claim.

The researchers initially hypothesized that there would be no difference in the portfolios' perceived usefulness to the applicants or employers between small and large organizations. To test these claims, the researchers performed a two-tailed z test to assess the difference in proportions of two independent samples (Bluman, 2018).

Results and discussion

Survey results

To test whether the number of yes answers were under or over 50%, the researchers performed a one-tailed z test of population proportions (see, for example, Bluman, 2018). The researchers used a one-tailed z test to compare if an observed proportion is less than or greater than a theoretical one. The theoretical proportion we chose was 50%.

Table 3 summarizes the results for questions 1, 2, and 3. Table 3 lists the research question, the z test's prediction, the number of useable responses, the percent of respondents answering yes, and the conclusion from the z test. The number of useable responses varies from question to question as participants could choose "don't know/not sure" as an answer. The researchers did not count the "don't know/not sure" answers as part of the useable responses.

As previously stated in Table 1, the researchers hypothesized that a minority of the employers would encourage job applicants to submit a portfolio. At the same time, a majority would recognize the value of a portfolio. Thus, we expected the number of positive "yes" answers for Question 1 to be less than 50%, and the number of yes answers for Question 2 and Question 3 to be over 50%.

There were 33% of respondents who said they encourage job applicants to submit a portfolio. The finding is consistent with the initial hypothesis that a minority ($p = 0.0000$) of employers encourage job applicants to submit a portfolio of their work.

There were 76% of respondents who said that portfolios might help the applicant in the hiring process. The finding is consistent with the initial hypothesis that most ($p = 0.0000$) companies think portfolios may help job applicants.

Question	Prediction	Useable responses (n)	% Yes	Conclusion
1. Do only a minority of employers encourage job applicants to submit portfolios?	The proportion of "yes" responses is less than 50%	162	33%	Minority of employers ($p = 0.0000^{***}$) currently encourage applicants to submit portfolios
2. Do the majority of employers say portfolios are useful to applicants?	The proportion of "yes" responses is more than 50%	151	76%	Majority of employers ($p = 0.0000^{***}$) say the portfolio may help the applicant in the hiring process
3. Do the majority of employers say portfolios may be beneficial to them in the hiring process?	The proportion of "yes" responses is more than 50%	156	75%	Majority of employers ($p = 0.0000^{***}$) say the portfolio may be beneficial for them as the employer

Note(s): The symbol *** indicates significance at the 1 percent level

Table 3. One-tailed z test results of population proportions of yes answers to survey questions

There were 75% of respondents who said a portfolio might be beneficial to them as an employer. The finding is consistent with the hypothesis that most ($p = 0.0000$) companies believe portfolios may be helpful to them as employers. However, this finding is less than the Hart Research Associates study (2013). The Hart study found that 83% of employers, including executives of corporations and nonprofit organizations, said ePortfolios would be helpful with the hiring process. This finding is also less than the results from an international study of European and Latin American countries (Ciesielkiewicz *et al.*, 2020). Ciesielkiewicz *et al.* (2020) indicated that 83% of human resource directors would use an ePortfolio to “select candidates for a job post at some stage in the recruitment process” and that 80% considered it a useful tool for obtaining broader and more detailed information on the candidate (Ciesielkiewicz *et al.*, 2020). However, Ciesielkiewicz *et al.* (2020) also found that 76% of directors would be willing to review the ePortfolio for the best candidate for the job, 86% agreed they would review the top three candidates, and 57% would review the ePortfolios of every candidate for the job (Ciesielkiewicz *et al.*, 2020). These numbers are more in line with the current findings.

The number of positive responses to Question 2 and Question 3 that portfolios are useful to the hiring process and applicants is more than double the number of companies that encouraged submission of a portfolio. This finding is consistent with Yu’s (2012) study that showed significant employer interest in ePortfolios. It is also compatible with Ambrose’s (2013) survey of the Notre Dame Career Board, 91% of which would visit a student’s ePortfolio if they followed up with an emailed link.

Companies that encourage portfolios versus those that do not

As previously stated, the researchers hypothesized that organizations that encouraged job applicants to submit portfolios would say that portfolios benefited the applicant and that the portfolio was useful to the employer (RQ4). To test this claim, the researchers performed one-tailed z tests to test the difference in proportions of two independent samples (Bluman, 2018), summarized in Table 4.

A one-tailed z test was performed to determine if a higher proportion of companies that encourage applicants to use portfolios will say they think portfolios are useful to job applicants than those that do not encourage applicants to submit portfolios. The results were that the majority ($p = 0.0000$) of companies that encourage portfolios say portfolios may be helpful to applicants than those that do not encourage them.

Another one-tailed z test was performed to determine if a higher proportion of companies that encourage applicants to use portfolios will say they think portfolios are helpful to them compared to those that do not encourage applicants to submit portfolios. The results were that the majority ($p = 0.0000$) of companies that encourage portfolios say portfolios may be beneficial to them as an employer than those that do not encourage them.

As predicted, the vast majority (98%) of employers who encouraged their applicants to submit portfolios believed them to help the employer or applicant. These results are consistent with the researchers’ hypothesis that the proportion of employers who say that portfolios help applicants and themselves in the hiring process will be higher for employers who encourage applicants to submit portfolios. The researchers expect this finding as employers encouraging the submission of portfolios would likely take the time to evaluate them. Employers using ePortfolios have a better sense of the candidate’s match for a job (Brammer, 2007; Ferns and Comfort, 2014), so they would be more likely to encourage submission of them.

The finding that almost all (98%) of the employers using portfolios believe that they are helpful to the applicant and the employer in the hiring process is strong evidence for why employers should be using portfolios. Even among employers who do not encourage applicants to submit portfolios, about half believe they will help the applicant and the

Table 4.
Z test results of the comparison of businesses that encourage portfolios versus those who do not

Question	Prediction	Encourage portfolios		Do not encourage portfolios		Conclusion
		Useable responses (n)	% Yes	Useable responses (n)	% Yes	
Do employers that say that portfolios benefit the applicant encourage the use of portfolios?	The proportion of “yes” responses will be higher for employers who encourage the use of portfolios	53	98	84	49	The majority ($p = 0.0000^{***}$) of employers that encourage portfolios say portfolios may be useful to applicants than those that do not
Do employers that say that portfolios benefit the employer encourage the use of portfolios?	The proportion of “yes” responses will be higher for employers who encourage the use of portfolios	52	98	88	50	The majority ($p = 0.0000^{***}$) of employers that encourage portfolios say portfolios may be beneficial to them as an employer than those that do not

Note(s): The symbol *** indicates significance at the 1 percent level

employer in the hiring process. This result supports ePortfolios as an emerging tool for hiring (Ciesielkiewicz *et al.*, 2020).

Large versus small businesses

The researchers initially hypothesized that there would be no difference in portfolios’ perceived usefulness to the applicants or employers between small and large organizations (RQ5). To test these claims, the researchers performed a two-tailed z test to assess the difference in proportions of two independent samples (Bluman, 2018). The results are summarized in Table 5. The two-tailed z test was performed to determine if the proportion of large companies that say that they think portfolios may help the applicant was equal to the proportion of small companies that say that they believe portfolios may help the applicant. Seventy-three percent of small business employers and 82% of large business employers believe that portfolios will help the applicant. There were no statistically significant differences in the perceived usefulness of portfolios between small and large business employers.

A two-tailed z test was performed to determine if the proportion of large businesses that say they think portfolios may help the employer is equal to the proportion of small businesses that say they think portfolios may help the employer. Seventy percent of small business employers and 82% of large business employers believe portfolios may help in the hiring process. Large businesses found portfolios more useful to them as employers in the hiring process ($p = 0.0848$) than small businesses. This finding is consistent with the results of interviews with recruiters from large companies during a Notre Dame Career Center Employer Advisory Board, in which 72% indicated that the “ePortfolio would be a valuable tool for their company’s recruiting” (Ambrose, 2013). The interviewers commented that students “need to be impressive and interesting” (Ambrose, 2013, p. 1).

Analysis by industry

Although there was insufficient data to perform statistical analysis, Table 6 lists the industry-specific data to the Question 1, “Does your company encourage job applicants to

Question	Prediction	Small business Useable		Large businesses Useable		Conclusion
		responses (n)	% Yes	responses (n)	% Yes	
Do large and small businesses differ in how they think portfolios will help the applicant in the hiring process?	There will be no difference in the perceived usefulness of portfolios to applicants between small and large businesses	95	73	56	82	There were no differences ($p = 0.1853$) in the perceived usefulness of portfolios to the applicants between small and large businesses
Do large and small businesses differ in how they think portfolios will help them as an employer in the hiring process?	There will be no difference in the perceived usefulness of portfolios to applicants between small and large businesses	94	70	62	82	Large companies found portfolios to be more useful ($p = 0.0848^*$) than small businesses to them as employers in the hiring process

Note(s): The symbol * indicates significance at the 10 percent level

Table 5.
Z test results of the comparison of perceived usefulness of portfolios to large and small businesses

Industry	Yes	No	Not sure/don't know
Advertising	100% (5)	0% (0)	0% (0)
Architecture	100% (6)	0% (0)	0% (0)
Education	15% (2)	69% (9)	15% (2)
Engineering	60% (6)	20% (2)	20% (2)
Hospitality	33% (6)	61% (11)	5% (1)
Pharmaceutical	20% (2)	50% (5)	30% (3)

Table 6.
Industry-specific data answers to the question “Does your company encourage job applicants to submit a portfolio of their work as part of the hiring process?”

submit an portfolio of their work as part of the hiring process?”. The researchers reported results from industries with at least ten responses, including education, engineering, hospitality, and pharmaceutical industries. Most of the employers in the engineering industry and almost all employers in architecture encouraged applicants to submit portfolios, consistent with these academic programs’ practice of requiring students to create ePortfolios. All five of the respondents from the advertising industry said that they encouraged the submission of portfolios. These fields require an applicant to demonstrate the execution of technical skills. A portfolio with selected artifacts demonstrates that the candidate has these skills.

Limitations

This study has several limitations. The first is the relatively new and under-defined nature of ePortfolios in the workplace, which may mean that many respondents are not familiar with these platforms or have differing views on what constitutes an ePortfolio. Secondly, as a matter of convenience, researchers distributed the survey to businesses in New Jersey, which limited the types of businesses surveyed. For example, the large business category included more government agencies and educational institutions than a similar Silicon Valley sample. The differential representation of certain industries may have influenced survey responses

regarding ePortfolios' use and ubiquity. Budgetary restrictions in securing additional survey responses and the response rate from *N.J. Biz* lists limited the number of samples that the researchers could collect.

This study focused on the views of portfolios from business representatives in New Jersey; given the global nature of our economy, conducting research in a major region of the world would significantly contribute to learning about the views of business representatives from around the world. The survey could be expanded to include questions to determine what artifacts employers from different countries deem necessary for an ePortfolio.

Concluding comments

Universities have opportunities to integrate web-based ePortfolio systems into their curricula and educate employers on the value of ePortfolios. This education can be done by showing employers examples of students' ePortfolios and discussing what the students' work demonstrates about their knowledge, skills and abilities. These discussions can be held when university personnel meet with external stakeholders at job fairs, as guest speakers, at professional meetings, and at advisory boards.

Based on the researchers' survey responses, while employers may not request or require the submission of an ePortfolio, they view them favorably and find them to be beneficial to all parties in the hiring process. Aligning with that response, in the 2021 report by the Association of American Colleges and Universities (AAC&U), *How College Contributes to Workforce Success: Employer Views on What Matters Most* (Finley, 2021), nine in ten employers surveyed in 2020 on the use of ePortfolios in job searches indicated they were "somewhat useful" or "very useful" in the hiring process. This represents an 11% increase in the use and acceptance of ePortfolios in the hiring process compared to a 2018 study (p. 13). In a 2016 report about the integration of ePortfolios in Australian business education, employers viewed ePortfolios to enhance traditional recruitment processes. Although the employers did not have an in-depth knowledge of the use of ePortfolios in recruitment, the report indicated there is a need for developing awareness of the ePortfolios in recruitment among employers (*Realising the potential ...*, 2016, p. 7).

Faculty members and university career services staff should encourage students to post their resumés, references, samples of written work, projects, and presentations to showcase their work for potential employers. In showcasing examples of their work, students should be instructed and mentored in the development of career-based portfolios throughout their course of study at the university in traditional educational programs or through certificate programs. Mentors can be faculty members, members of career centers, or business representatives who assist students in choosing the artifacts to display in the portfolios. Concurrently, universities should address employers' concerns by showcasing sample web links that contain student artifacts demonstrating the knowledge, skills, and abilities preferred by employers. This demonstration could be done during job fairs held on campus, thus reducing recruiters' lack of familiarity with ePortfolios and addressing the value, cost, and time issues noted in the survey.

Many institution-specific content management systems and proprietary software companies such as Portfolium and Digication have incorporated keyword search capabilities which allow students to tag their work by skill sets which permit employers to more easily match required skill sets with applicants. By integrating ePortfolios into their search parameters, employers can be notified of, review, and follow potential applicants. In addition, these ePortfolio platforms have settings that protect students' information and allow students to release information to targeted groups as chosen by the students. Students are able to adapt a version of the ePortfolio for each employer or field, determining which assignments and projects exemplify the skills and qualities that appeal to those recruiters.

For institutions concerned about the cost and maintenance of a content management system capable of performing all the functions necessary for creating, uploading, storing, and retrieving ePortfolios, adopting a web-based format may be a more accessible, less-expensive solution. Job-hunting students, employers seeking candidates, and institutions assessing and reporting student outcomes to stakeholders would benefit from using web-based ePortfolios.

Monitoring the work done in Australia, the UK, as well as America, on the integration of ePortfolios in business education would benefit higher education personnel globally. For example, in the 2016 report *Realising the potential: Assessing professional learning through the Integration of ePortfolios in Australian business education* the authors of that report present their findings of the OLT-funded study. Included are six key recommendations including greater emphasis needs to be given to ePortfolios in terms of business education regarding delivery of quality learning experiences that enhance students' career preparation and employability prospects (p. 5). In addition, a significant part of the incorporation of ePortfolios into business education is the need to convey to academics the value of ePortfolios in student learning and to educate business academics about the nature and value of ePortfolios.

Future research

Future surveys could be expanded to include questions that determine what artifacts employers think would be necessary for an ePortfolio. The ePortfolio concept originated in the higher educational setting to support learning and develop pedagogical best practices, which explains why most of the research on ePortfolios draws on the findings within an academic setting which limits the scope of its efficacy from an HRM perspective. There is a lack of research on ePortfolios in an organizational environment, making it difficult to find a sizable body of evidence to ascertain its impact in small and large business firms' hiring process (Ward and Moser, 2008). Therefore, more research studies, including focus group research with employers, are needed to discern how small and large business firms use ePortfolios to recruit talented employees especially in the post-Covid workplace.

In addition, little is known about how educators and students protect sensitive information in ePortfolios when engaging disadvantaged individuals and communities, the risk of unintended ethical consequences remains. This concern was highlighted in a study by Wilson *et al.* (2018) that sought to identify research concerning how ethical issues are addressed in ePortfolios. Their study pointed out how sensitive information from vulnerable communities and individuals may be compromised inadvertently when they consent to capture their image, not realizing that their identity may be shared with an unintended audience. While there appears to be guidance on privacy and data protection, educators, students, and Human Resource personnel would benefit from training to address legal, safe, and ethical practices for ePortfolios in a digital environment (Fisher and Hill, 2015; Wilson *et al.*, 2018). Additional research in this area would be beneficial to HRM personnel.

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