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***Employers' Expectations of Graduates' Technical and Managerial Competencies in the Digital Graphics & Print Media Industry***

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# Employers' Expectations of Graduates' Technical and Managerial Competencies in the Digital Graphics & Print Media Industry

by Haji Naik Dharavath, Ph.D. • Central Connecticut State University

## Introduction

Over the past two and a half decades, graphic communications has been revolutionized by new technology. These changes have resulted in both opportunities and challenges and have created a need for college graduates who understand the entire digital graphics and print media process. Graduates with up-to-date technical competencies will be able to manage print and non-print media-related operations efficiently.

As part of the graphic communications group of industries, printing is ranked among the largest in the United States. The value and role of printing continues to change as new technology is introduced in the industry. Today, the use of print is integrated across multiple digital media communication channels including web, mobile, and tablet publishing. Due to advancements in computer networking and web enabled media workflow automation technologies, graphics and print media have become a powerful multi-channel marketing and communications tool. As a result, higher technical

competence and expertise is required to control and manage the technologies and resources used in the print media industry.

The industry work areas of digital pre-media, photography, animation, video, web publishing, printing, packaging and multimedia are merged together to create many new career opportunities. Modern graphic communications education programs prepare graduates for a wide variety careers with specializations as diverse as print production, web development, Computer Generated Imagery (CGI), video, 3D printing, game development, digital publishing, motion graphics, and photography. Common positions held by graduates of graphic communications degree programs are equally diverse, including titles such as Media Technologist, Workflow Analyst, Graphic Designer, Web Content Manager, Project Manager, Cost Estimator, Pre-media Technologist, and Color Quality Coordinator. Some graduates become owners of print and non-print media businesses.

## Rationale For Literature Review

Printing Industries of America (PIA) reports that across the United States there are 30,000 companies employing over 470,000 people, with annual sales exceeding \$80 billion (PIA, 2018). Printing (printing, publishing, and packaging) is also the most geographically dispersed manufacturing industry. On average, every state in the US has at least 50 printing companies, employing over 700 people, with more than \$100 million in sales (PIA, 2018)

Printing Industries of New England States (PINE), is a regional PIA affiliate representing the New England States (NES). It provides advocacy and educational support for the printing industry and educational institutions. PINE represents graphic communications companies in Connecticut, Rhode Island, Massachusetts, Maine, New Hampshire, and Vermont. NES companies generate \$11 billion in sales annually (PINE, 2016).

Graphic Communications educational programs are part of several vocational and technology-based educational programs and curriculums. The Print and Graphics Scholarship Foundation (PGSF) Directory of Schools (2018) revealed that the educational requirements differ significantly between technical and community colleges and the programs of undergraduate and graduate-level degrees.

Marshall (2000) stated that two common challenges of technology-based educational programs across the country are to increase enrollments and to maintain modern curriculum. Technological developments in the graphic communications industry are creating a greater need for a qualified and skilled workforce. Graphic communications companies and educators need to integrate technological and managerial innovation into the modern curriculum to prepare the future production workforce and managers for industry. Education plays a critical role in building modern market-based economies and raising the standard of living (Denny & Harmon, 2000).

As the graphic communications industry replaces older technology, employee skills also need to change. New technology is often difficult for many older industry workers to adopt, especially with the rapid changes that have occurred over the past ten years in the industry. Modern graphic communications education can prepare

individual to cope with industry advancements (Faiola, 1999).

## Purpose of the Study

The purpose of this research was to determine the expectations of company leaders belonging to the Printing Industries of New England States (PINE) related to competencies for entry-level technical positions. The following research questions were investigated:

1. What type of technical and managerial competencies are expected by graphic communications industry employers in the NES region?
2. Where is the new workforce for the graphic communications industry coming from?
3. What kind of educational background would graphic communications industry leaders most prefer to hire?

## Method Applied

In order to elicit information for this study, a five -page on-line survey questionnaire was used to obtain data on the relative importance of graphic communications graduates' technical competencies for various production segments of the graphics and print media industry. This required the cooperation of Printing Industries of New England (PINE) and its members. Data collected with this survey was limited to PINE only. The target population for this study included NES region printing companies. The lists of companies were identified from PINE's Print and Graphics Buyers Guide (2016) and its Membership Directory (2016). Online survey questionnaires were addressed to the president and/or manager of each identified company.

For this study, graphic communications production segments included print management; digital prepress; cross media; digital printing production; bindery and distribution; color management; and digital workflow management. The survey included a series of competency statements associated with these production areas. A Likert-type scale was used to differentiate employer expectations on technical competencies. Survey questionnaire content was validated by a panel of experts. The panel included members of PINE. In validating the survey questionnaire, an initial draft was given to these panel members to check for errors and readability and to make suggestions for improvements in the survey

questionnaire. All the required changes were made based on recommendations.

During the fall of 2016, the survey questionnaires was e-mailed to 150 (N=150) randomly selected PINE industry members of the NES region and the PINE members in other regions of the country. Follow-up surveys were e-mailed to non-respondents after four weeks.

## Data Analysis

Of the 150 (N = 150) survey questionnaires that were e-mailed to companies, 44 (n = 44) surveys were returned and complete, for a 29.33% response return rate. Descriptive statistics were used to analyze the data.

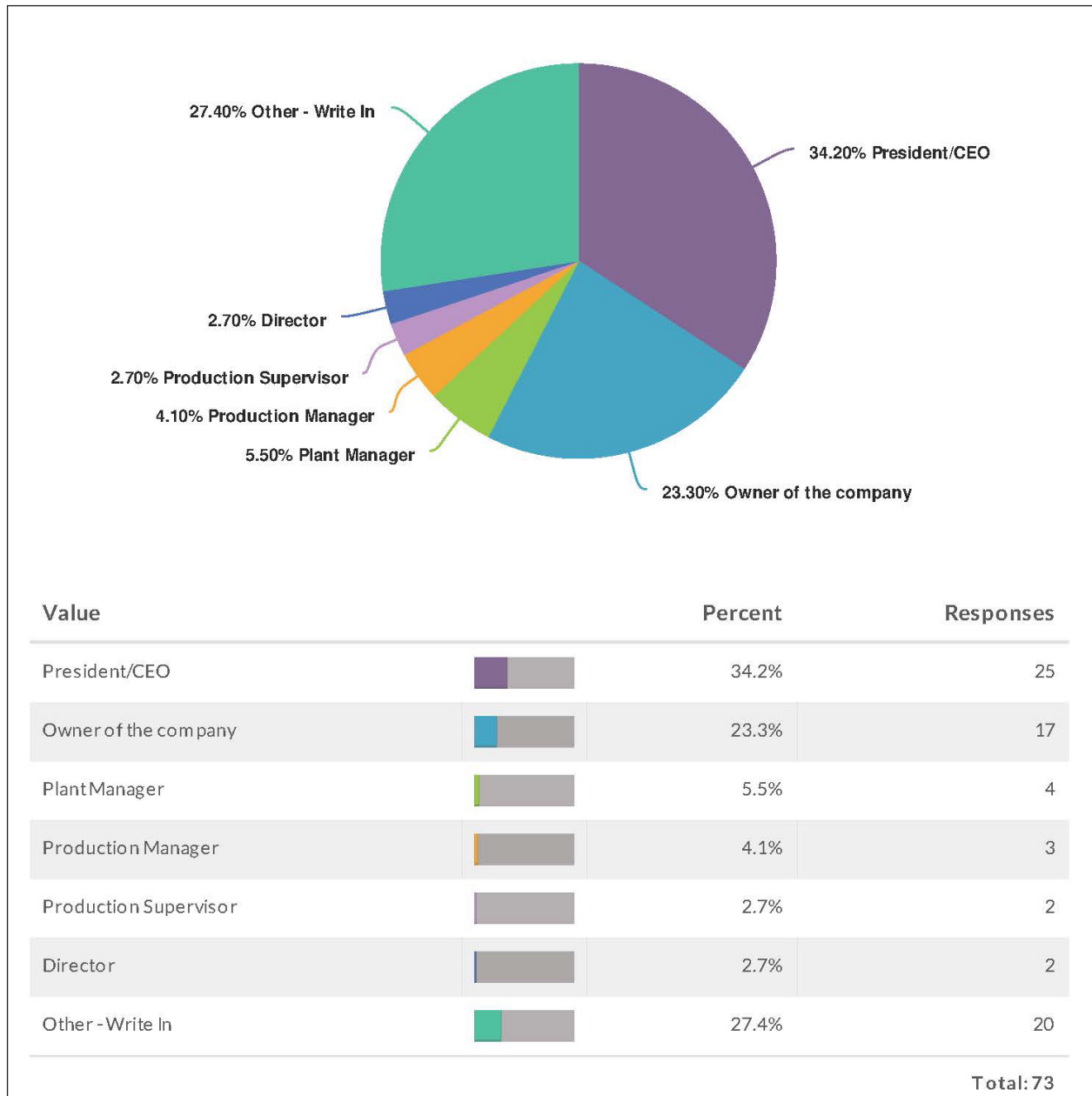


Figure 1: Profile of the Respondents

## Business Profile of the Respondents

A majority of the respondents (57.5%) indicated that their current positions were President/CEO and/or Owner. A total of 70% of respondents are associated with printing businesses in the NES region. These respondents are utilizing digital and offset printing processes to print a wide variety of materials. The remaining respondents are part of non-print graphic and media-related companies (See Figures 2 & 3).

A majority of the respondents (55%) are employing between 10 to 50 employees, with 16% having between 51 to 100 employees, and 29% with 101 to 250+ employees. A total of 62% of the respondents have annual shipments (sales) of \$2.5 million to \$10 million, followed by 38.5% with annual sales from \$10 million to \$25 million (See Figures 3, 4, and 5).

## Non-Print Digital Media

Table 1 applies to the competencies expected of college program graduates related to non-print digital media.

Non-print digital media includes technology related to 2D/3D animation, interactive motion graphics, and video. Respondent perceptions are described as 5 point averages ranging from "Very Important" (VI) to "Unimportant" (UI). For analysis, the ratings of Very Important (VI) and Important (I) were grouped and considered to be a single "important" competency.

A total of 15 competencies are rated. A majority of the respondents indicated higher importance for understanding basic principles of coding in the digital graphics and print operations, followed by competency in preparing content on multiple platforms and devices. This is likely due to changing technologies in the digital front-end platforms of the modern output devices (computer-to-plate, direct imaging, and digital proofers/digital presses), which require the customization of templates in workflow applications for .jdf or .xml or .pdf print ready files (Table 1).

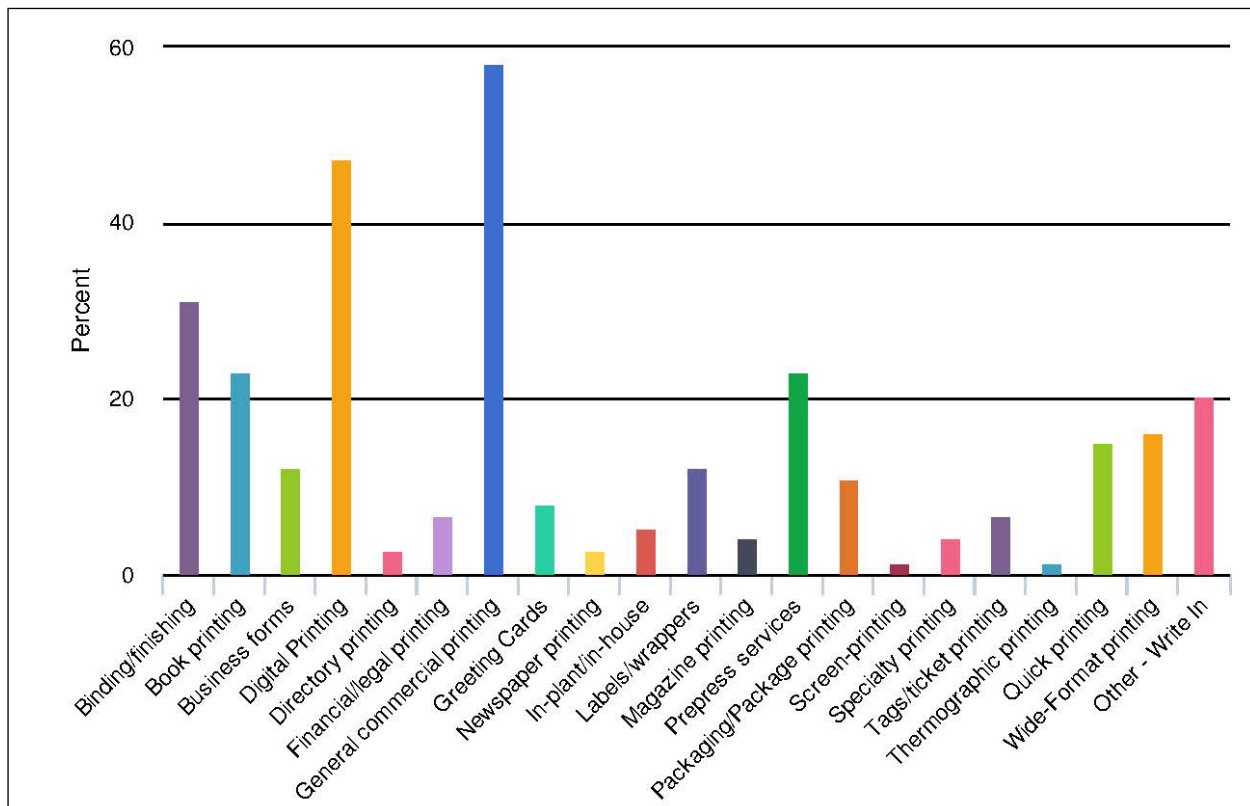


Figure 2: Profile of the Respondents: Type of Printed Products

Respondents perceived 7 of the 15 competencies as important, followed by graduates' abilities in identifying the requirements for the digital content publishing, ability to implement integrated media production. Also understanding the color management for non-print media channels are perceived to be important.

## Technology, Systems and Utilizations of the Processes (TSUP)

Table 2 details the relative importance rated on competency statements related to Technology, Systems and Utilizations of the Processes (TSUP). This section applies to the competencies expected for job duties related to safely efficiently producing graphics and print-media products and services, such as prepress, printing, finishing, and distribution.

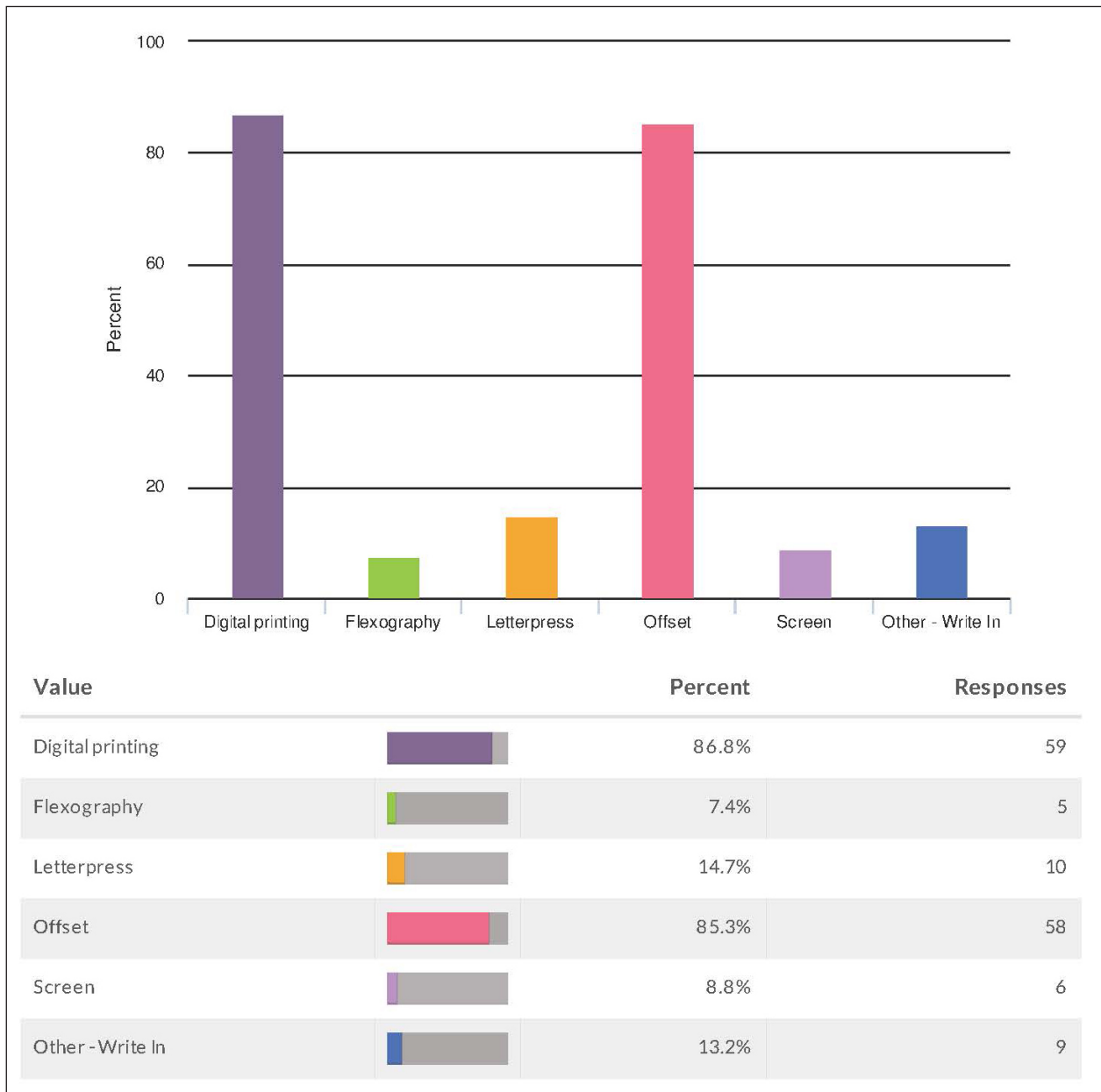
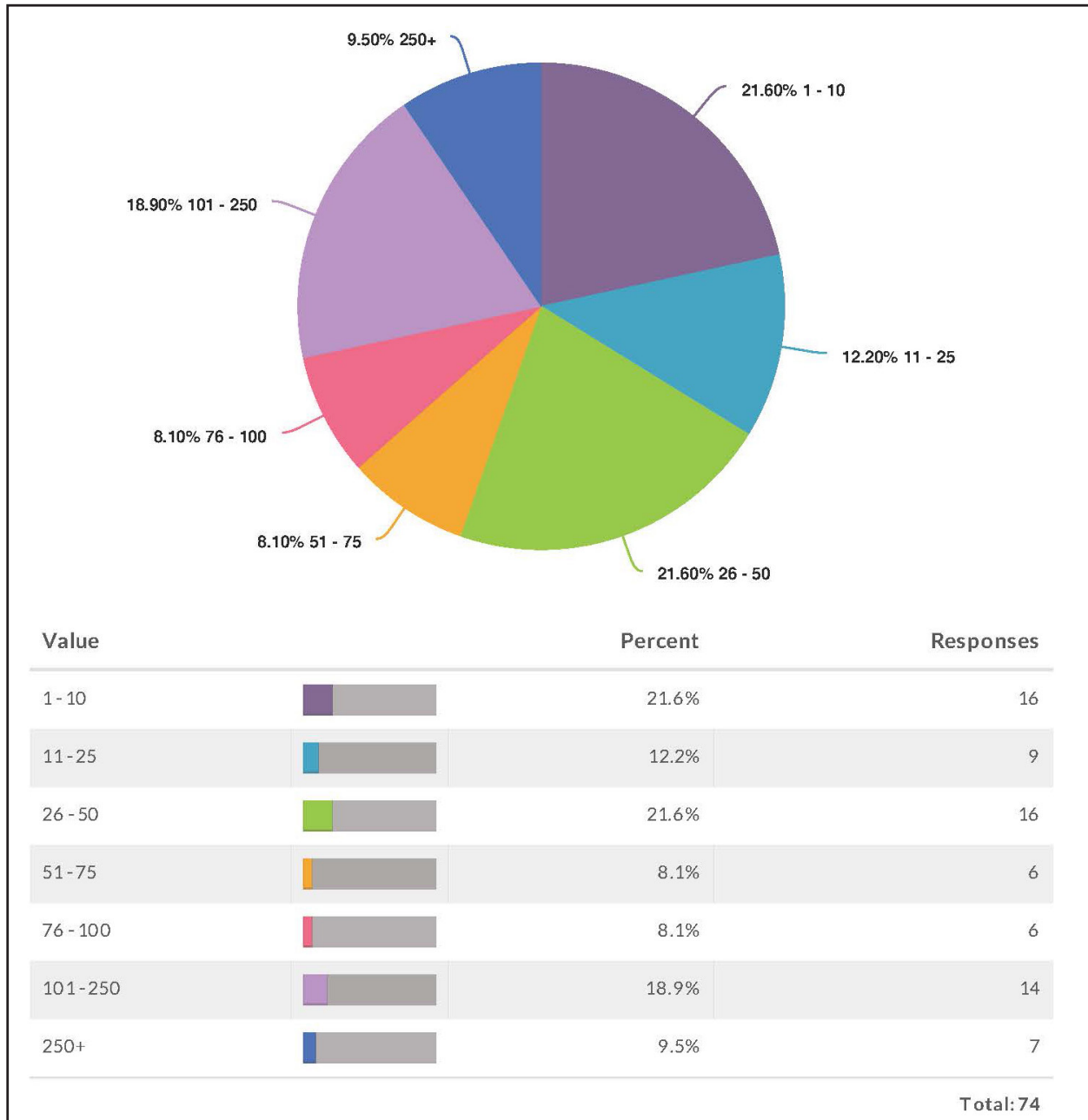


Figure 3: Profile of the Respondents: Type of Printing Processes Used

For analysis, the ratings of Very Important (VI) and Important (I) were grouped and considered to be a single "important" competency. A total of 7 competencies were rated.

Additionally, there was a perceived higher importance for the competencies in workflow/color management systems.

Data indicates that 67% to 95% of the respondents expected that graduates should possess abilities in creating proper pre-press files and executing proper printing production/finishing/distribution operations.



See Figure 4: Profile of the Respondents: Number of Employees

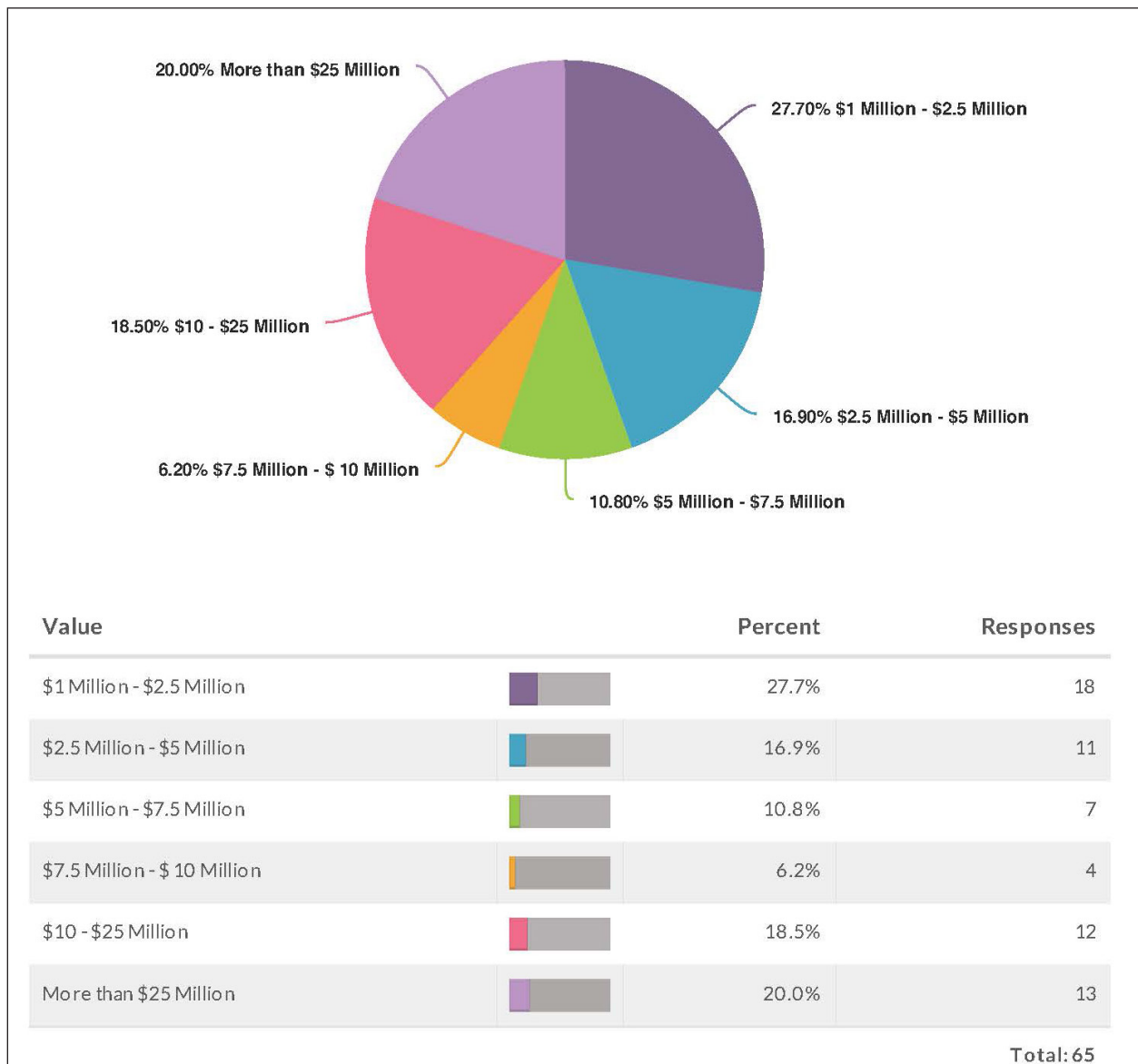


## Project Management, Workflows and Workforce (PMWW)

Table 3 applies to competencies related to managing projects, workflow and workforce by using appropriate business practices and management strategies. Additional competencies in decision-making, critical thinking, problem solving, using the scientific method, systematic approaches, and analytical reasoning were also rated.

For analysis, the ratings of Very Important (VI) and Important (I) were grouped and considered to be a single "important" competency.

Data suggest that Industry personnel perceive a high importance for competencies in this area. Between 72% and 92% of the respondents expected that graduates possess ability in problem solving, decision making, and critical thinking. Additionally, technical competencies in project management and leading/directing the workforce were rated as important.



See Figure 5: Profile of the Respondents: Annual Sales in Millions (\$)

## Group Processes and Working Effectively (GPWE)

Table 4 presents the importance of employer expectations of graduates' competency levels in Group Processes and Working Effectively GPWE. Detailed is the relative importance of competency statements related to group processes, working effectively in teams, and demonstrating leadership abilities. From the data, this appears to be a very critical area. The ratings of Very Important (VI) and Important (I) were grouped and considered to be a single "important" competency. A total of 9 competencies were rated.

Data indicates that between 80 % and 93% of the respondents expect graduates to be prepared to accept accountability and responsibility, to be punctual, able provide conflict resolution, and to respect the contributions of others.

## Communication and Ethical Standards (CES)

Table 5 presents the importance of employer expectations of graduates' competency levels in Communication and Ethical Standards (CES). This includes written, graphic, and verbal skills to communicate effectively with colleagues/professionals/clients in the digital graphics and print media industry. Additionally, competencies related to ethical standards in business is perceived as very important.

For analysis, the ratings of Very Important (VI) and Important (I) were grouped and considered to be a single "important" competency. A total of 12 competencies were rated. The data suggest a very high importance placed for curriculum in this area. Data indicates that 62 % to 93% of the respondents expect that graduates be prepared to communicate effectively across multiple forms of communication. Also rated for higher importance was the use of graphic communication

<b>Competency Statement(s)</b>	<b>Level of Importance (n=44)</b>				
	<b>VI</b>	<b>I</b>	<b>MI</b>	<b>LI</b>	<b>UI</b>
Identify requirements for digital content publishing	22.5%	47.5%	20%	10%	0%
Prepare content with consideration to consumption through multiple platforms and devices	34.1%	53.7%	7.3%	4.9%	0%
Understand basic principles of coding (conditionals, operators, functions, etc.)	10%	30%	40%	20%	0%
Approach problem solving from both analytical and creative perspective	43.9%	41.5%	9.8%	4.9%	0%
Understand digital asset management (input and output of various file formats)	36.6%	36.6%	17.1%	9.8%	0%
Work in environments utilizing version control	17.9%	33.3%	41%	7.7%	0%
Understanding of 2D and 3D animation	0%	10.3%	56.4%	28.2%	5.1%
Understanding of timeline manipulation for motion graphics/Animation	0%	5.3%	52.6%	36.8%	5.3%
Understand e-Media / e-Publishing & Strategies	20%	27.5%	40%	12.5%	0%
Understand Video Production and Transmedia	2.6%	26.3%	26.3%	28.9%	15.8%
Ability to Implement Integrated Media production	26.3%	28.9%	28.9%	15.8%	0%
Understand Color Management for Non-Print Media	28.2%	41%	28.2%	26%	0%
Apply strategies for Non-Print Media Digital Asset Management	10.3%	43.6%	35.9%	7.7%	2.6%
Describe the importance of Non-Print Media Workflow Management	2.7%	48.6%	43.2%	2.7%	2.7%
Apply tools and techniques for Print & Non-Print Media Workflow Automation	23.7%	44.7%	11%	2.6%	0%

5 = Very important (VI), 4 = Important (I), 3= Moderately important (MI), 2 = Little importance (LI), 1 = Unimportant (UI)

<b>Table 2: Importance of Expected Competency in TSUP</b>		<b>Level of Importance (n=44)</b>				
<b>Competency Statement(s)</b>	<b>VI</b>	<b>I</b>	<b>MI</b>	<b>LI</b>	<b>UI</b>	
Proper Computer File Preparation	75%	15%	5%	2.5%	0%	
Proper Printing Production Operations	57.5%	37.5%	0%	2.5%	2.5%	
Proper Finishing Operations	53.7%	31.7%	9.8%	4.9%	0%	
Proper Digital and/or Physical Distribution Operations	35.9%	43.6%	15.4%	5.1%	0%	
Proper Workflow/Color Management System Utilization	56.1%	39%	0%	2.4%	2.4%	
Proper Estimating/Scheduling/Planning System Utilization	30%	37.5%	30%	2.5%	0%	
Safe/Appropriate Use of Equipment/Systems	37.5%	40%	17.5%	2%	0%	

5 = Very important (VI), 4 = Important (I), 3= Moderately important (MI), 2 = Little importance (LI), 1 = Unimportant (UI)

<b>Table 3: Importance of Expected Competency in PMW</b>		<b>Level of Importance (n=44)</b>				
<b>Competency Statement(s)</b>	<b>VI</b>	<b>I</b>	<b>MI</b>	<b>LI</b>	<b>UI</b>	
Project Management	56.1%	31.7%	4.9%	7.3%	0%	
Workflow Selection/Setup/Monitoring	40%	47.5%	10%	2.5%	0%	
Directing/Leading Other People	53.7%	24.4%	14.6%	4.9%	2.4%	
Customer Service/Scheduling	40%	42.5%	12.5%	5%	0%	
Planning/Estimating/Costing	30.8%	43.6%	23.1%	2.6%	0%	
Analysis/Problem-Solving	72.5%	17.5%	5%	5%	0%	
Decision-Making Techniques	51.2%	39%	2.4%	7.3%	0%	
Critical Thinking	64.3%	28.6%	0%	2.4%	4.8%	
Problem Solving	83.3%	9.5%	0%	7.1%	0%	
Application of Scientific Method	29.3%	43.9%	19.5%	7.3%	0%	

5 = Very important (VI), 4 = Important (I), 3= Moderately important (MI), 2 = Little importance (LI), 1 = Unimportant (UI)

<b>Table 4: Importance of Expected Competency in GPWE</b>		<b>Level of Importance (n=44)</b>				
<b>Competency Statement(s)</b>	<b>VI</b>	<b>I</b>	<b>MI</b>	<b>LI</b>	<b>UI</b>	
Accepting Responsibility	64.3%	28.6%	0%	4.8%	2.4%	
Accountability	78.6%	14.3%	0%	2.4%	4.8%	
Punctuality	63.4%	26.8%	4.9%	4.9%	0%	
Time Management	56.1%	36.6%	0%	7.3%	0%	
Delegating and Directing Others	33.3%	47.6%	11.9%	7.1%	0%	
Open to Feedback	57.1%	31%	4.8%	4.8%	1%	
Respect/Affirm the Contributions of Others	45.2%	45.2%	4.8%	2.4%	1%	
Negotiation	35%	47.5%	6%	2.5%	0%	
Conflict Resolution	43.6%	48.7%	5.1%	2.6%	0%	

5 = Very important (VI), 4 = Important (I), 3= Moderately important (MI), 2 = Little importance (LI), 1 = Unimportant (UI)

<b>Table 5: Importance of Expected Competency in CES</b>		<b>Level of Importance (n=44)</b>				
<b>Competency Statement(s)</b>	<b>VI</b>	<b>I</b>	<b>MI</b>	<b>LI</b>	<b>UI</b>	
Written Communication Skills	52.4%	38.1%	2.4%	4.8%	2.4%	
Verbal Communication Skills	71.4%	19%	2.4%	4.8%	2.4%	
Print Media Communication Skills	48.8%	39%	7.3%	2.4%	2.4%	
Listening Skills	73.2%	19.5%	0%	2.4%	4.9%	
Grasp of Professional Vocabulary/Terminology	39%	48.8%	9.8%	2.4%	0%	
Appropriate Choice of Communication Methods	16%	13%	10%	2%	0%	
Researching/Planning/Organizing for Communication	37.5%	35%	25%	2.5%	0%	
Evaluating Communication Effectiveness	31%	31%	31%	7.1%	0%	
Demonstrates Integrity and Conduct Reflective of Professional Standards	71.4%	19%	2.4%	4.8%	2.4%	
Sound Judgment	56.1%	39%	0%	4.9%	0%	
Fairness in Dealing with Others	50%	40.5%	2.4%	7.1%	0%	
Appropriate Use of Resources	46.3%	46.3%	2.4%	2.4%	2.4%	
5 = Very important (VI), 4 = Important (I), 3= Moderately important (MI), 2 = Little importance (LI), 1 = Unimportant (UI)						

<b>Table 6: Sources of Workforce and Educational Background (SWEB)</b>		<b>Level of Agreement (n=44)</b>				
<b>Concern Statement(s)</b>	<b>SA</b>	<b>A</b>	<b>NO</b>	<b>DA</b>	<b>SD</b>	
<b>The largest source of workforce supply is and will be:</b>						
College/University graduates	5.1%	56.4%	12.8%	23.1%	2.6%	
Community college graduates	12.8%	56.4%	17.9%	12.8%	0%	
Vocational/technical school graduates	43.9%	41.5%	9.8%	4.9%	0%	
Other	37.5%	37.5%	21.9%	1%	0%	
<b>The New England states region needs university level Graphics &amp; Print Media educational degrees of:</b>						
Associates	41.5%	51.2%	2.4%	4.9%	0%	
Bachelors	26.8%	61%	7.3%	4.9%	0%	
Masters	4.9%	19.5%	34.1%	39%	2.4%	
<b>Graduates of Graphics &amp; Print Media education from a university &amp; college are:</b>						
Better qualified for the job	10%	52.5%	25%	10%	2.5%	
Know more about the technology	17.9%	59%	12.8%	10.3%	0%	
Know more about the business	10.3%	41%	17.9%	25.6%	5.1%	
Know more about the industry and its process	10.5%	47.4%	18.4%	18.4%	5.3%	
Of value to our industry	20%	60%	20%	0%	0%	
5 = Strongly Agree (SA), 4 = Agree (A), 3 = No opinion (NO), 2 = Disagree (DA) and 1 = Strongly Disagree (SD).						



terminology in communicating with others in the field. A majority of respondents (91% to 95%) rated highly graduates' ability to maintain high ethical standards while employed in the industry.

### Sources of Workforce and level of their Educational Background (SWEB)

Table 6 shows employers' relative concerns with workforce, education and training issues. Data suggests that the new workforce will be garnered from graphic arts program in vocational/technical schools, followed by the community college graduates. Between 87% and 92% of the respondents agreed that the region needs graphic communications education at the associate and bachelor degree level. Additionally, respondents agreed that graduates with graphic communications education know more about the technology and are of more value to the industry upon entering the workforce.

Table 7 shows data related to the labor situation and impact of technology on the present workforce. For analysis, ratings of strongly agree (SA) and agree (A) is combined and considered as "agreed." A total of 15 statements of concern were rated.

Only 19.5% rated present graphic communications educational programs as preparing the workforce needed for the industry in the NES region. A majority of the respondents had no opinion on this statement. Almost all of the respondents agreed that the industry should offer internships/training programs. Additionally, data suggests present technology and workforce automation will affect the need for a skilled workforce. Over 98% of the respondents agreed on the importance of supporting their employees to enhance their skills. Lastly, 83% of the respondents agreed that the industry should fund graphic communications education.

<b>Concern Statement(s)</b>	<b>Level of Agreement (n=44)</b>				
	<b>SA</b>	<b>A</b>	<b>NO</b>	<b>DA</b>	<b>SD</b>
My company is facing a serious workforce shortage	24.4%	41.5%	9.8%	22%	2.4%
Technology and automation affecting the need for skilled Workforce	22%	65.9%	2.4%	7.3%	2.4%
There is a need for the workforce in the New England states graphic & print media industry	43.9%	56.1%	0%	0%	0%
Future workforce needs of our industry will be met by today's Graphics & Print Media educational programs	5%	27.5%	20%	42.5%	5%
Industry should set aside funds to enhance graphic & print media education	24.4%	58.5%	12.2%	4.9%	0%
Industry should offer free training sessions to educators to enhance their skills	27%	55%	15%	2.5%	0%
Industry should offer internships to students and educators to enhance their skills	31.7%	68.3%	0%	0%	0%
Employee layoffs in the future due to the new technologies	4.9%	46.3%	26.8%	17.1%	4.9%
Employees of the graphic & print media industry must enhance their skills to meet the needs of today's technology	34.1%	63.4%	2.4%	0%	0%
Current graphics & print media curriculum is preparing skilled graduates for our industry	4.9%	14.6%	34.1%	46.3%	0%
New England states printing industry knows their workforce and labor needs, as such it should prepare workers for employment	17.1%	61%	14.6%	7.3%	0%
Industry has a workforce shortage in the prepress area	7.3%	41.5%	17.1%	34.1%	0%
Industry has a workforce shortage in the press area	43.9%	39%	12.2%	4.9%	0%
Industry has a workforce shortage in the bindery and print finishing area	40%	45%	7.5%	7.5%	0%
Industry has a workforce shortage in the printing management area	14.6%	31.7%	24.4%	29.3%	0%

5 = Strongly Agree (SA), 4 = Agree (A), 3 = No opinion (NO), 2 = Disagree (DA) and 1 = Strongly Disagree (SD).

## Conclusions

This research focused on the relative importance of technical and managerial competencies of the graphic communications graduates, as rated by industry business leaders. Also, this study identified workforce issues and concerns in the New England region. Technological developments have radically changed the structure of the traditional printing industry. Due to these technological developments, significant changes are continuing in the printing industry, and thus demand a skilled workforce with up-to-date managerial and technical competencies.

One of the universities in the NES region utilized this study as a “needs assessment tool” in making decisions on existing curriculum revisions and laboratory development initiatives. As a result of this study, this university started a Bachelor of Science degree in Graphics Technology effective in the fall semester of 2018. Graphic communications educators need to focus on educating and training students to gain skills that will be in higher demand in the future as compared to those of the present. In addition, educators can compare the findings of this study with existing curricula to identify strengths and weaknesses. If needed, educators may implement new courses and topics in the graphic communications curriculum. For example, industry representatives perceived a higher importance on “understanding basic principles of coding/programming.” As such, educators can integrate this content into the curriculum to meet the current expectations of industry.

Research studies on technical competencies are required to make sound curricular decisions for technology-based graphic arts educational programs. New developments in industry should be integrated into the curriculum so that both graduates and industry can benefit. Finally, industries and educators must work cooperatively to better promote education, as well as make efforts to enhance the current curriculum and educational programs. Without the cooperative effort of these groups, industry will face a serious workforce shortage in the future.

The study was supported/endorsed by Printing Industries of New England (PINE), an affiliate of Printing Industries of America (PIA). Data was collected in fall 2016 – spring 2017 through an online survey questionnaire. For the 2018-2019 academic year PINE awarded US\$70,000.00 in scholarships through its foundation [Graphic Communications Scholarship Foundation of New England (GCSFNE)] to students at various educational institutions

in the NES region (PINE President, Personal Communication via e-mail, January 28, 2019).

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# Visual Communications Journal Submissions Guidelines

## Submittal of Manuscripts

- » All manuscripts must be received by the editor no later than **December 15<sup>th</sup>** to be considered for the spring Journal or by **June 15<sup>th</sup>** to be considered for the fall Journal.
- » Submit papers and correspondence to: Gabe Grant <gjgrant@eiu.edu> or check [www.GCEAonline.org](http://www.GCEAonline.org) for contact information for the GCEA Vice-President of Publications.

## Types of Articles

- » The *Visual Communications Journal* accepts four levels of articles for publication:
- » 1. Edited articles are accepted or rejected by the editor. These articles are not submitted to a panel of jurors. The decision of the editor is final.
- » 2. Juried articles are submitted to the editor and are distributed to jurors for acceptance/rejection. Juried articles are typically reviews of the literature, state-of-the-art technical articles, and other nonempirical papers. Jurors make comments to the author, and the author makes required changes. The decision of the review board is final.
- » 3. Refereed articles are submitted to the editor and are distributed to jurors for acceptance/rejection. Refereed articles are original empirical research. Jurors make comments to the author and the author makes required changes. The decision of the review board is final.
- » 4. Student articles are submitted by GCEA members and are accepted/rejected by the editor. These articles are not submitted to a panel of jurors. The editor's decision is final. Please be aware that poorly written student papers will be rejected or returned for editing.

## Eligibility for Publication

- » Members of the Graphic Communications Education Association, or students of GCEA members, may publish in the *Visual Communications Journal*.
- » Those wishing to publish should join GCEA before submitting their paper for review.

## Audience

- » Write articles for educators, students, industry representatives, and others interested in graphic arts, graphic communications, graphic design, commercial art, communications technology, visual communications technology, printing, photography, or digital media. Present implications for the audience in the article.

## Manuscript Form and Style

- » Prepare manuscripts according to the APA style.
- » Submit your paper in Microsoft Word format.
- » Call out the approximate location of all tables and figures in the text.
- » List your name, highest degree, affiliation, and title on the first page only. Article text should begin on the second page.
- » Please proofread carefully before submitting.

## Figures (Graphics)

- » Number and write a caption for each figure. Include captions in a list at the end of your Word document.
- » Screen captures should be as large as possible.
- » Photos should be about 300 ppi to span one column (3-inches) or 2 columns (6.5-inches).
- » Line art should be in a vector format.
- » Tables will be formatted by the designer to fit in one column (3" wide) or across two columns (6.5" wide).

## Tables

- » Set up tables in separate Microsoft Word documents, one document for each table.

## Publication and Format

- » The *Visual Communications Journal* is published and distributed twice a year, in the spring and in the fall. Each article of the *Journal* is published online at [www.GCEAonline.org](http://www.GCEAonline.org). Provided there are at least 24 pages of content, the *Journal* will be printed and mailed to GCEA members.

## Notice of Limitation

- » Articles submitted to the *Journal* cannot be submitted to other publications while under review. Articles published in other copyrighted publications may not be submitted to the *Journal*, and articles published by the *Journal* may not be published in other publications without written permission of the *Journal*.