



Problem Solving Abilities of Workers: A Study of Some Printing Industries in Kumasi

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Abstract

This study presents empirical evidence on problem solving abilities of workers in the printing industry based on their skills, knowledge and experience. Out of 100 participants sampled for the study, 94 were available for data collection. Interview was used as the main tool in the data collection process. The data analyses revealed that the workers go through the processes of problem identification, determination of possible solutions, and actively work to solve problems. When a worker goes through these processes to solve a problem, it means that worker has problem solving ability. More than half of the workers interviewed said they are able to use their skills, knowledge and experience to go through the processes to identify problems, determine possible solutions, and work to solve problems. Even though some of the workers have participated in training sessions and workshops to increase their competency levels, these sessions were not regular. The study concludes that, the rate at which demand for printed products, technological advancement, materials and methods are affecting the preparation, production and finishing of printed products, problem solving ability of workers is needed, if we want to avoid breaks in print production process and increase the quality of work, so as to reap the full benefit of the industry.

Keywords: Problem Solving; Ability; Competency; Printing; Industry; Kumasi

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1. Introduction

Working in the printing industry requires a demonstration of competency in order to achieve the desired level of professionalism to meet the demanding nature of printed products, technological advancement, materials and methods. The word "printing" comes from the Latin word, "premere", which means to press [1]. Printing is commonly defined as a process of reproducing text and images [2] on paper using ink [3]. Printing workers produce printed materials in three stages: prepress, press, and binding and finishing. They review specifications, calibrate colour settings on printers, identify and fix problems with printing equipment, and assemble pages [4]. In publishing, the word "printers" describes both industries providing printing services and individuals who directly operate printing presses [5]. The fact remains that the printing industry is undergoing dramatic changes with the advent of software design tools and high speed digital printing. Most importantly, new technologies in production, quality control, volume of work, delivery time, equipment, materials and methods are transforming the workforce skills required to support the evolving printing industry [6]. For instance, new technologies have brought forth the need for varied skills requirements. This is very true in typesetting, plate making, presswork, editorial work, storing, and distribution [7]. All positions in the industry require varying level of competency such as knowledge-technical, equipment operation, attention to detail, customer service, safety and health compliance and problem solving, which can be categorized as basic skills, core skills and operating skills. Problem solving ability is the kind of competency needed to identify problems, determine possible solutions, and actively work to resolve them [8, 3].

1.1 The printing industry in Kumasi

In Kumasi, the printing industry plays a major role as a permanent means of mass communication in businesses, industries and among the general public [7]. Printed products are used for many reasons from birth to death. This has given rise to new products, markets, and a growing population of consumers. There is no doubt that printing has for a long time been a major force in the socio-economic, political, cultural and religious activities of the people. In this regard, many products of the printing industry are used in the development and promotion of agricultural, educational, religious, social, political, cultural, tourism, health care, and business activities of the people. The consumption of printed materials in the metropolis are in the forms of books, magazines, newspapers, posters, displays, catalogues, packages, advertising materials, flyers and others. The past and present use of printed materials in Kumasi gives an indication that there will be an increase of patronage in the future.

Kumasi has various specialized industries; it is common to find printing industries concentrated at the same place to discharge their operations. Certain places that have gain recognition for printing activities include Asafo, Adum, Amakom, Afful Nkwanta, Ash Town, Fante New Town and Buokrom. However, it is common to also see some printing industries isolated and dotted at certain areas of the metropolis.

The relevance of the printing industries in the metropolis is indisputably evident in the provision and consumption of printing services and printed materials. For instance;

- Printing activities serve as a source of employment for the people; such that, the industry offers employment for many people in graphic design, imaging and typesetting, colour separation, plate making, presswork, finishing and binding, supply of materials and merchandising of printing materials and products.
- Printed products are used to perpetuate and preserve the culture of the people.
- Printed products are used to communicate among businesses, industries and the general public.
- Printing products are used to keep records of activities and events.
- The printing industry helps in promoting tourism within the metropolis.
- Printing plays a major role in advertising activities of industries and businesses within the metropolis.
- Printing helps in the development and promotion of education in the metropolis.
- Printing helps in the development and promotion of agricultural activities within the metropolis.
- Printing helps in the development and promotion of health care utilization in the metropolis.
- Printing helps in the management and dissemination of information in the metropolis.

Existing studies have pointed out that printing industries can be categorized based on the type of customers they serve, the types of jobs they print and the equipment they use. Even though there are wide varieties of technology that are used to print stuff [2], conversely, there are specialty firms which offer services, such as typesetting, color separation and plate making, design and layout, binding and finishing, to some printing industries. These specialty firm operators usually do not complete the entire production process [7]; they do their segment with the best quality possible and leave the rest of the production process to be continued by others. However, typical printing industry has three sections for preparation, production and finishing of printed products. The printing industry in Kumasi can be categorize among package and publication printing industries that mainly use the offset lithographic process, though some firms still use letterpress printing for some jobs [3].

In spite of the vital role of the industry within the metropolis, there has not been any study to look at the problem solving abilities of the workers in preparing, producing and finishing of printed materials. It is therefore prudent, in no other time than now, to carry out this study on the ability of workers to solve problems related to the activities of prepress, press and post-press, based on their skills, knowledge and experience and to further consider their participation in training courses and workshops.

2. Methods and Materials

2.1 Research design

In order to meet the objectives of the study, data were gathered on possible problems in printing and how the workers are able to solve them. Nine printing industries were sampled from Kumasi for the study. Permission was sought from the President of the Ashanti Regional Printers Association. The researchers together with the Secretary of the association visited the printing industries earlier before the actual time of the study. This was to introduce the purpose of the study and give the participants prior notice on the information needed so that they would be well prepared to give the necessary information. The involvement of the Secretary contributed to the participants' acceptance to participate in the study and offer credible information.

2.2 Sampling frame

Simple random sampling was used to select the nine industries where a sample of 100 participants was created. The participants were chosen through purposive [9] and convenience sampling from the prepress, press and post-press sections of the visited industries. These were mainly people who had been working in the printing industry and they already have skills, knowledge and experience in the industry. The goal was to have all participants represented in the study.

2.3 Instruments for Data Collection

Interview was used as the instrument for gathering data for the study. The researchers made personal contacts to conduct interviews with the participants to enquire about the (a) ability of workers to solve problems related to prepress, press and post-press activities based on their skills, knowledge and experience, (b) the participation and impact of training courses and workshops by workers.

2.4 Method of data analysis

The data collected were carefully analysed and described, to draw conclusions on the phenomenon under investigation. All the data, which were collected in the local language, were directly translated into English by the researchers. Efforts were also made to maintain the originality and clarity of information while translating it into English and transcribing into text.

3. Results and Discussions

Out of 100 participants sampled for the study, 94 were available for the study. Figure 1, however, gives the summary of the general description of the workers who participated in the study.

3.1 Problem solving abilities of workers using their skills and experience

The prepress procedure includes the manufacture of printing plate, as well as the adjustment of images and texts or the creation of a high-quality print file [2]. The study revealed that the workers at the prepress see themselves to be in the state of continues process of problem solving. The workers however regard every procedure at the prepress to be a problem that they are able to solve with their skills, knowledge and experience in creative design and layout, typesetting and imaging, color separation, and plate making to provide solution. Through their activities, they are able to provide essential materials, ready for mounting on the press, to solve any problem that may arise at the press by the mere absence of these essential materials.

The press operators prepare, run, and maintain printing machines. Their duties vary according to the type of press they operate. Traditional printing methods, such as offset lithography, gravure, flexography, and letterpress, use a plate or roller that carries the final image that is to be printed and then copies the image to

paper [10]. It is revealing to know that in the pressroom, the major problem faced by of the printers, who operate the printing machines, is the frequent breakdown of the printing machines. According to the interview, more than half of the workers, by virtue of their long term use of the printing machines, are able to solve minor engineering problems such as faults with the ink system, water system, cylinder, and setting of gripper. This confirms the assertion that press workers are able to identify and fix problems with printing equipment [4].

No.	Item	Description	Frequency	% in approximation
1.	Participants' role in the press industries	Creative design and layout	11	12%
		Typesetting and imaging	9	10%
		Colour separation	6	6%
		Platemaking	7	7%
		Presswork	23	24%
		Finishing and binding	38	40%
2.	Section	Pre-press	33	35%
		Press	23	25%
		Post-press	38	40%
3.	Years of experience	< 5 year ago	16	17%
		5 – 10	36	38%
		> 10 year	42	45%

Figure 1: General description of participants

Some other registration problem that the workers mentioned and explained that they are able to handle based on their skills, knowledge and experience are:

- Scumming, this occurs when the non-image areas become sensitive to ink.
- Scratching, this occurs from improper handling of plates before they are ready for exposure.
- Specks and spots, which appears as unwanted images in the non-image area.
- Broken images, which also occur when parts of the images are missing. According to the interview, this is as a result of under exposure during preparation of plates.
- Blinding, prevents the image area from accepting ink.

The knowledge exhibited by the respondents show that they are able to deal with a variety of defects in printed images such as poor registration and alignment, poor colour density, hair and hickey impressions, dot gain and ink smudging. According to them, when any of these is encountered, they examine their stock, ink and equipment to determine if plate imperfections, poor cylinder adjustments, incorrect ink settings or sequencing,

inaccurate roller pressures, poor water-to-ink balances or incorrect ink drying temperatures are responsible. Upon identifying the problem, they determine possible solutions, and work to solve the problem by trying likely solutions and running tests until the faults have been corrected [11].

The post-press, seemingly, is the largest section of the printing industries visited. It includes everyone involved in the finishing activities of the printing firms who are involved in cutting, collating, binding, laminating, stitching, counting and packing to complete the production process of the printed material. One of the major problems of all the printing industries represented in the study has to do with paper. The cutting machine operators, over a period of time, working on the machine, also said they use their skills, knowledge and experience to repair minor faults that may be developed by the cutting machines when in use. They added that since their activities take place between the presswork, as they cut papers into the sizes needed for printing to be done, and post-press, when they trim the printed material into the required sizes, they are able to use their skills, knowledge and experience to cut papers in such a way that they are able to avoid waste.

Within all the printing industries visited, the activities that went on at the binding and finishing sections were collating, stitching, lamination and binding. While the workers who engaged in collating the printed materials said it takes skills and experience to be able to sort and collate books that have alpha-numeric numberings, the binders disclosed that different books have different problems in binding. According to the binders, the major factor that poses problem to all binders is the volume of the books they need to bind. In such case, it requires skills and experience to arrange the sections of the voluminous book in a way that will make the binding not only easier but also possible.

3.2 Participation of workers in training courses and workshops

Nearly all the press operators said they have attended training courses and workshops related to their work, according to them the workshops were organised for them by the Ashanti Regional Printers Association and were mostly held on different occasions at the Department of Publishing Studies, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi. The concern raised by the respondents was that they were not awarded any certificate of participation. In this case, they were not motivated. They however had some doubts about the purpose and credibility of the workshops. According to the respondents, the last workshop took place in 2005 and since then there has never been any. In a related study, it was recommended that the Department of Publishing Studies, KNUST could develop refresher courses for the workers in the printing industry to address the Knowledge, Skills and Attitude (KSA) gaps within the industry [3], which we believe could also augment their problem solving abilities.

While some graphic designers at the prepress were found pursuing post-graduate degree in Communication Design at the Kwame Nkrumah University of Science and Technology, others also said they had attended training courses and workshops organised by the Communication Design, KNUST and Approachers' Series Publication, a publishing industry in Kumasi.

Most of the workers said, through the trainings and workshops they attended, they have been able develop good working ethics and time management. This is an indication that the training and workshops actually did not address the issue of technical competency in problem solving. Some of the workers explicitly expressed their disappointment as they said the training and workshops they attended were used by the organisers as platforms to work out their personal interests, and to get the workers in the industry strictly under their instructions. The respondents concluded by labeling the training and workshop programmes as nothing but brainwashing activities.

4. Summary of Findings

The study in a whole presents empirical evidence on the problem solving abilities of workers in the printing industry. Nonetheless, theoretical ideas were employed to clarify the findings. The findings, however, confirmed that technical and production problem are inherent in working at any section of the printing industry, be it prepress, press or post-press. Therefore the workers find themselves in a continuous state of problem solving activities which expense their knowledge, experience and skills. The workers go through various processes of problem identification, determination of possible solutions, and active work to solve the problems [8]. When a worker goes through the processes to solve problems in a printing industry, it means the worker has problem solving ability. More than half of the workers interviewed, however, said they are able to use their skills, knowledge and experience to go through the processes to identify problems, determine possible solutions, and work to solve them. Even though some of the workers have participated in training sessions and workshops, these training sessions and workshops were not regular.

5. Conclusions and Recommendations

In conclusion, considering the rate at which demand for printed products, technological advancement, materials and methods are affecting the preparation, production and finishing of printed products, we recommend that regular training and workshops must be organised with focus on developing the problem solving ability of workers in the printing industries in Kumasi if we want to avoid breaks in the production process, increase quality of work and reap the full benefit of the industry.

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