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A Comparison of Site Manager Competencies and Attributes in Ireland with those of the Site Superintendent in the United States

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The construction industry is one of the oldest internationalized economic sectors dating back more than 100 years. The role of construction site manager or superintendent is one of the most important contributing to project success. In 2013 the authors utilized mixed methods research to determine which Site Manager competencies and attributes were most important for project success in Ireland. These data were compared to a 2010 research project in the United States which used a similar survey to identify construction Superintendents' competencies and attributes required for success. Forty-two competencies and attributes were identified and ranked in order of importance. Comparing data gathered in both studies indicates that there is no statistically significant difference in the ranking of 31 of the competencies and attributes required for construction site manager and superintendent success. The number one ranked competency for Superintendent success in the United States and Site Manager Success in Ireland is the "Ability to Plan Ahead". Having a "Strong Work Ethic" was ranked number three in both countries. Five competencies and attributes were significantly more important for a superintendent's success in the United States, and six competencies and attributes were significantly more important for a Site Managers' success in Ireland.

Keywords: Site Manager, Superintendent, Site Supervision, Construction Supervision

Introduction

According to Pheng and Hongbin (2004), "from a global perspective, the construction industry is probably one of the oldest internationalized sectors that can be traced back more than 100 years" (p. 277). Internationalization is the construction industries response to globalization. "Due to globalization, the business world [including the construction industry] has been completely transformed over the past 30 years" (Bishop, Reinke & Adams, 2011, p. 117). Bishop, Reinke and Adams define globalization: "Globalization is the increasing integration and interdependence among countries resulting from the modern flow of people, trade, finance and ideas from one nation to another" (p. 117).

Because of globalization and the internationalization of the construction industry, many construction professionals may choose to (or be asked to) work in countries other than their countries of origin. Having an understanding of differences and similarities in roles in other countries may facilitate success for these individuals. One of the most important roles is that of Superintendent or Site Manager.

"The [construction] job superintendent is like the conductor of a symphony orchestra. He must see that all elements are fitted together at the right time and sequence" (Diamant & Debo, 1988, p. 8). The job title for the supervisor on a construction site in the United State is Superintendent, Project Superintendent or General Superintendent, while in Ireland this role is most often carried out by the Site Manager.

This research project was developed to identify Site Manager competencies and attributes required for success in Ireland. According to Styhre and Josephson (2006),

In the construction industry, it is site managers at construction sites who play the most important middle management role. For instance, Mustapha and Naoum (1998, p. 1) write: ‘The site manager stands at the heart of the success or failure of the project for the contractor, the professional team, the client and ultimately the general public’. (p. 521)

The primary research questions addressed in this paper include: What are the similarities and differences in the roles of Site Manager in Ireland and Superintendent in the United States? Is the importance of the various competencies and attributes required for success similar?

Limitations include the 3 year difference between when data were gathered for the two research projects. The changes in technology, the way projects are delivered, and the economy, may have produced differing results. Another limitation is that we are comparing a large population of construction professionals in the United States to a much smaller population in Ireland.

Literature Review

Current literature identifies the similarities between the Superintendent in the United States and the Site Manager in Ireland and the United Kingdom. The job titles are different, but it seems that the roles have many similarities.

Construction Superintendent in the United States

Schaufelberger and Holm (2002) state, ‘‘The superintendent is responsible for the direct daily supervision of construction activities on the project, whether the work is performed by the contractor’s workers or those employed by subcontractors’’ (p. 9). Mincks and Johnston (2004) focus on the superintendent’s field knowledge stating that regardless of the project delivery method chosen, ‘‘the superintendent is responsible for the correct, timely, and profitable construction of the project. It is the superintendent’s responsibility to coordinate labor, material, equipment and subcontractors’’ during construction.

The functional role has ‘‘the necessary skills and understanding of common construction methods and practices’’ (p. 24). Gould and Joyce (2002) identify the changing source of superintendents stating that traditionally superintendents ‘‘were people from the trades themselves, working their way up to a management position.’’ In recent years, ‘‘more superintendents have been hired out of college engineering or construction management programs’’ (p. 50).

The success of a project is the responsibility of the construction team leaders, the project manager and the superintendent. Clough, Sears and Sears (2005) state, ‘‘In practice, construction project authority is wielded much as a partnership effort, with the project manager and the project superintendent functioning as allied equals’’ (p. 285). The list of success factors generated by Sanvido, Grobler, Parfitt, Guvenis, and Coyle (1992) is presented in Table 1. Different construction companies delegate responsibility and authority in different ways. Table 1 is the authors’ attempt at summarizing how the responsibility for project success is often delegated.

Table 1: *Criteria Leading to Project Success*

| Contractor’s Criteria for Project Success | Responsible Person |
|--|------------------------------------|
| Meet the Schedule | Superintendent |
| Project Profit | Project Manager and Superintendent |
| Under Budget (including savings for the owner or contractor) | Project Manager and Superintendent |
| Quality Met or Exceeded | Superintendent |
| No Claims and/or Litigation | Project Manager and Superintendent |
| Safety | Superintendent |
| Client Satisfaction | Project Manager and Superintendent |
| Good Subcontractor Buy Out | Project Manager |
| Good Direct Communication | Project Manager and Superintendent |
| Minimal or No Surprises during the Project | Project Manager and Superintendent |

(Gunderson, 2008)

Some of the similarities between a Superintendent and a Site Manager were identified in research done by Styhre and Josephson (2006) identifying that the role of site manager “demands significant experience of the construction industry” (p. 523). Mustapha and Naoum (1996) state, “The site manager stands at the heart of the building process. His ability will strongly influence the success or failure of the project for the contractor, the professional team, the client, and ultimately the general public” (p. 1).

John Mc Elliott, currently a freelance engineer, with many years’ experience in the industry as a site manager, considers the role to be:

A person managing a construction site who also works closely with any subcontractors to schedule them at appropriate times. In some cases, having plumbing and electrical subcontractors in the same area at the same time could be inconvenient as they may get in each other’s way. If a major change in the project is required, the site manager will usually be the one who draws up a change order, or directs the order to be drawn. (personal communication, n.d.)

The diversity of the Site Manager’s work responsibilities was identified by Styhre and Josephson (2006), “first the site manager is responsible not only for technical and production-oriented matters on the construction site, but also has to be trained in administrative work, legal matters, [and] human resource management.” (p.523)

Research Methods

A multi-phase research project completed in the United States (Gunderson, 2008; Gunderson & Gloeckner, 2011) identified the competencies and attributes required by the construction project superintendent for project success. Just as in this project, the researchers used purposive sampling combined with a modified snowball sampling to get participants. In purposive sampling, “the participants are handpicked from the accessible population” (Gliner, Morgan, & Leech, 2009, p.124). In snowball sampling, the participants selected are “asked for references or names of other people they may know who fit into the same category” (Gliner, Morgan, & Leech, 2009, p.125). In the current protocol, the purposive selected participants in Ireland were asked to forward the e-mail invitation to colleagues in the construction industry.

In 2013 the authors utilized a mixed methods research protocol to determine which site manager competencies and attributes were most important for project success in Ireland. The planned sequential explanatory research design (Creswell & Plano Clark, 2011) included a survey followed by face to face interviews. Since participants were completing the survey at the same time previous survey participants were being interviewed, the research protocol became more of a concurrent mixed methods design. The survey, completed by 59 participants, invited the construction professionals to volunteer to be interviewed. These preliminary results are being compared to a research project in the United States which used a very similar survey to identify the superintendents’ competencies and attributes required for success (Gunderson & Gloeckner, 2011). The Gunderson and Gloeckner (2011) protocol was a sequential exploratory mixed methods research design. The results of the qualitative interviews informed the survey instrument. The same basic survey instrument was used in Ireland. Some terminology was modified based on one of the author’s personal knowledge of and experience in the construction industry in Ireland.

Both surveys used a 7-point Likert scale for participants to rank each of the competencies or attributes with zero being “not important” and six being the “most important” for success. Following is a comparison of rankings of competencies and attributes required for success for Site Managers in Ireland and superintendents in the United States.

Research Results

A total of 59 participants in Ireland completed the survey in 2013, and 459 participants responded to the survey in the United States in 2010. The 59 participants in Ireland are 0.04% of the approximately 150,000 people working in the construction industry in Ireland (Society of Chartered Surveyors Ireland, 2013), and the 459 participants in the United States are 0.008% of the approximately 6,000,000 people working in the construction industry in the United States (US Department of Labor, 2014). Thirteen construction professionals in Ireland were interviewed after they

completed the survey. The interviews were recorded and transcribed. The transcribed interviews were then coded to allow themes to emerge. Some questions were developed for the interviews to help explain the survey results.

The statistical analysis software SPSS version 20 (Morgan, Leech, Gloeckner & Barrett, 2013) was used to analyze and compare data gathered in Ireland with data gathered in the United States. NVivo9 was used to help organize and code the qualitative data that were gathered.

The table in Appendix A compares ranking of the importance of competencies and attributes for the success of Site Managers in Ireland with Superintendents in the United States. Many of the competencies and attributes required for Site Manager and Superintendent success in Ireland and the United States had similar rankings. There are 11 competencies and attributes which resulted in a statistically significant difference based on t values greater than 3.0. Table 2 presents the competencies and attributes which are more important for the success of Superintendents in the United States. Table 3 presents the competencies and attributes which are more important for the success of Site Managers in Ireland. Although other items were statistically significant at the .05 and even .01 level, when adjusting for the number of paired comparisons, we used .005 (adjusted Bonferroni for exploratory questions) as a conservative cutoff point.

Since the survey was an exploratory quantitative study with a large difference between the two comparison groups, the authors decided to run the Independent t-test after testing for assumptions (Morgan, Leech, Gloeckner, & Barrett, 2013, p. 173-174), but conservatively adjusted the p value for significance using Bonferroni adjustment (Huck, 2012, p.221).

Table 2. *Competency or Attribute Significantly more Important in the United States*

| Competency or Attribute | USA Mean | Ireland Mean | Independent t | Significance |
|------------------------------------|----------|--------------|---------------|--------------|
| Strong Values and Ethics | 5.58 | 5.26 | 5.08 | <.001 |
| Sense of Urgency | 5.29 | 4.79 | 4.39 | <.001 |
| Understand Work not Self-Performed | 4.95 | 4.47 | 3.88 | <.001 |
| Leadership Skills | 5.61 | 5.32 | 3.56 | .001 |
| Visualize in 3D | 5.21 | 4.71 | 3.02 | .004 |

Table 3. *Competency or Attribute Significantly more Important in the Ireland*

| Competency or Attribute | USA Mean | Ireland Mean | Independent t | Significance |
|--|----------|--------------|---------------|--------------|
| Ability to use Management Software | 3.70 | 4.34 | -4.78 | <.001 |
| Typing Skills | 3.29 | 3.93 | -3.75 | <.001 |
| Ability to use Scheduling Software | 4.10 | 4.60 | -3.57 | .001 |
| Spreadsheet Skills | 3.86 | 4.42 | -3.40 | .001 |
| Understand Building Information Modeling | 3.26 | 3.91 | -3.30 | .004 |
| Word Processing Skills | 3.69 | 4.23 | -3.14 | .002 |

Site Manager's Role: Similar to the Superintendent

Interviews with construction professionals after they had completed the survey provided additional insight into the role of the Site Manager in Ireland. The emergent theme of being responsible for all field operations and subcontractor coordination was very evident. The following taken from interviews supports the similarity between the role of the Site Manager in Ireland and the Superintendent in the United States.

One individual with 32 years construction experience currently working as an Operations Manager/Project Manager described the role of the Site Manager as follows:

I suppose the role of the Site Manager is the single point of contact person who manages all activities, all personnel, be it from a demand and the supply point of view on the site. So he's totally responsible for all activities on the site.

On a large site, where it requires more than one person in a supervision role, there may be individual trades foremen working under the Site Manager, but I would see the Site Manager as the single point of contact for everything that happens on a particular site. Generally he would be full-time on that site complying with the Health & Safety Regulations and requirements as well.

Typically that Site Manager would report to what we call a Contracts Manager [who] would have overall responsibility for the project, encompassing procurement, design team management and the role and responsibilities of the Site Manager as well. The Contracts Manager would have overall responsibility; he or she would report up the chain then to basically a Regional Director.

Another construction professional with 19 years of experience and currently working as a Construction Director described the Site Manager's role as follows:

I suppose the Site Manager's role is coordination mainly. They should know how to build a job. They should have it built in their head. They should have done all that prior in other roles. If it's a big job they're coordinating their own managers below them; they're coordinating all the subcontractors; making sure all the costs are kept in line; making sure the job is being built correctly from a quality point of view. Obviously safety is their concern as well. So they're really on top of overseeing everything. But it's mainly people skills and coordination.

A Construction Manager with 30 years construction experience, currently working for a university as an owner's representative, described the Site Manager as follows:

The Site Manager's role would be to basically run his site and coordinate his contractors and subcontractors onsite. He would be responsible for the proper execution of the works to make sure it's done on time, it's done correctly, and sequenced properly. He would obviously be overall responsible for scheduling – well, somebody else I would imagine would schedule materials and subcontractors and he would just make sure that that schedule is updated and is properly followed.

The Site Manager's responsibility for site safety was also an emerging theme as evidenced by the following from a 20 year construction veteran currently working as an owner's representative for a hospital in Dublin:

He's the sort of glue that keeps the whole site together. He acts in a coordination role between all the different contractors. He transposes across all the different departments from Health & Safety all the way up to Senior Manager, back to utilities, to the local authorities, to the planners. Onsite, Health & Safety would be a very strong function of the Site Manager.

Another theme which emerged from the qualitative data was the requirement for the Site Manager to do more paperwork and to take on more administrative responsibilities. One 16-year veteran of the construction industry responded to the question, "How do you think that the role of the Site Manager has changed?" with the following: "It's more paperwork, I think, definitely. More administrative definitely." Another construction professional stated, "Now the Site Manager may be back doing engineering tasks again, quantity surveying tasks, administration tasks. The Site Manager has a lot more roles now."

The increase in administrative responsibilities is closely associated with another emerging theme, an increase in the use of technology. One 30-year construction professional stated the following when asked the question, "How do you think that the role of the Site Manager has changed?": "Well, technology. That's probably the biggest change. When we first came to Hegarty it was fax machines and it was phone calls. Now it's all emails – too much email. You have now the iPads and everything."

Conclusion and Discussion

Analysis of quantitative and qualitative data indicate there are many similarities between the role of the Site Manager in Ireland and the Superintendent in the United States. It might be possible for a Site Manager from Ireland to work as a Superintendent in the United States, just as it might be possible for a Superintendent from the United States to work as a Site Manager in Ireland. The similarities in the competencies and attributes required for success for both roles is evident. The ways in which the roles have changed are very similar: an increased emphasis on safety; an increase in administrative responsibilities (more paperwork); and the increase in the use of technology.

Both roles require extensive experience in the actual construction process with most Site Managers and Superintendents coming up through the trades. Certainly there would be some differences in materials and methods and differences in the construction culture from one country to another. This would be the same within the United States, for example, where the differences in materials and methods and differences in the construction culture between the Pacific Northwest and the Southeast are very evident.

It is possible to explain some of the differences in the roles of Site Manager and Superintendent and yet other differences require more research for an explanation to emerge. The biggest difference seems to be the level of perceived importance that having “Strong Values and Ethics” is required for success. Results indicate that that having “Strong Values and Ethics” is ranked 21 for the Site Manager in Ireland compared to being ranked 7 for the Superintendent in the United States. This was the most statistically significant difference in the competencies or attributes required for success. Participants being interviewed provided some insight, but there were no emergent themes and no saturation of the data when trying to determine why this difference exists.

One 16-year Irish construction veteran stated:

I think in Ireland people tend to say, ‘Ah, it’s grand. Don’t worry about it.’ For me – I can speak for myself now – but for me I’ve been on a lot of sites and Site Managers or Project Managers, if they can get away with something they’ll say, ‘Don’t worry about it.’ It all comes down to cost at the end of the day and how much that company’s going to make. I think it’s wrong, because I think at the end of the day your reputation and the quality should be Number One, but I think unfortunately too much in Ireland... It’s all the way through unfortunately.

Another construction professional with 32 years construction experience was surprised by the difference stating:

I think those requirements should be scored high. In my survey I’m pretty sure I would have scored them high. And the reason behind that is because when you’re dealing with individuals, different stakeholders, but particularly site people, they’re generally kind of fairly straightforward and honesty is important, and integrity, and to be able to trust people, etc. And I think if you can trust people, well then the majority of people will go with that direction - and as a Site Manager you’re continually giving direction on site.

One Project Manager with 15 years construction experience felt that the terminology used in the survey may have been confusing to the participants:

Well, I suppose if you look at the top question there, strong work ethic... I think if you have a guy with a strong work ethic he obviously has strong values and ethics. A terminology thing, I think, yeah. It’s a terminology thing. Like I actually scored work ethic as probably my Number One, because I think if a guy has a strong work ethic he comes in here at seven a.m. in the morning and he has a strong work ethic all day and does what he can. I think generally speaking it’s a terminology thing. I think yes, ethics and all of that and values are very important, but I think it’s a terminology thing actually.

Another 30-year construction veteran was surprised by the results stating, “[Strong Values and Ethics] would be high up in my priority because the team that you’re dealing with, be it your own people or your subcontractors, they’ve got to trust you.”

Since no clear theme emerged it would be important to gather more data to see if the difference between the importance of Strong Values and Ethics in the United States and in Ireland is due to differences in terminology or if indeed there is a significant difference in the cultures.

Looking at the competencies and attributes which ranked significantly higher in Ireland than in the United States (Table 3), there may be an emerging theme: The importance of using computer technology is higher in Ireland than in the United States. One reason for these results might be that the data were collected in the United States 3 years prior to the data being collected in Ireland. Certainly the construction industry in both countries has experienced significant technological advances in that 3 year time span.

Another difference which would require more research to confirm seemed to involve work-life balance. Even though the results from surveys in both countries rank “Strong Work Ethic” number 3, there seemed

to more emphasis on work-life balance in Ireland. There is no data to support this conjecture, other than the researchers' perception. Clearly additional interviews and/or a survey would be required to support this anecdotal observation.

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Appendix A

Comparing Site Manager & Superintendent Competencies & Attributes

| US | | Competency or Attribute | Irish | |
|------|------|---|-------|------|
| Rank | Mean | | Rank | Mean |
| 1 | 5.80 | Ability to Plan Ahead | 1 | 5.64 |
| 2 | 5.68 | Scheduling Work Activities | 5 | 5.47 |
| 3 | 5.66 | Strong Work Ethic | 3 | 5.53 |
| 4 | 5.65 | Ability to Get Along with Others | 2 | 5.54 |
| 5 | 5.61 | ***Leadership | 11 | 5.32 |
| 6 | 5.61 | Reliable and Responsive | 7 | 5.37 |
| 7 | 5.58 | ***Strong Values and Ethics | 21 | 4.93 |
| 8 | 5.54 | Understand Construction Materials | 8 | 5.36 |
| 9 | 5.54 | Understand Safety Regulations | 14 | 5.26 |
| 10 | 5.45 | Oral Communication Skills | 9 | 5.36 |
| 11 | 5.44 | Broad Knowledge of Construction | 6 | 5.44 |
| 12 | 5.42 | Ability to Work with Different People | 12 | 5.29 |
| 13 | 5.38 | Collaboration Ability | 10 | 5.32 |
| 14 | 5.37 | Trust Building Ability | 18 | 5.07 |
| 15 | 5.35 | Detailed Knowledge of Construction | 15 | 5.24 |
| 16 | 5.35 | Reinforce Behavior in Others | 16 | 5.07 |
| 17 | 5.31 | Time Management | 4 | 5.48 |
| 18 | 5.31 | Ability to “Keep Your Cool” | 13 | 5.28 |
| 19 | 5.31 | Team Building Skills | 19 | 5.05 |
| 20 | 5.30 | Listening Skills | 20 | 5.00 |
| 21 | 5.29 | ***Sense of Urgency | 24 | 4.79 |
| 22 | 5.21 | ***Visualize in 3-D | 26 | 4.71 |
| 23 | 5.15 | Ability to Learn from Others | 17 | 5.14 |
| 24 | 4.95 | ***Understand Work NOT Self-Performed | 32 | 4.47 |
| 25 | 4.93 | Cost Control | 22 | 4.89 |
| 26 | 4.89 | Math Skills | 29 | 4.58 |
| 27 | 4.84 | Ability to Teach | 30 | 4.57 |
| 28 | 4.81 | Ability to Obtain Competent Foremen | 28 | 4.59 |
| 29 | 4.68 | Understand Personnel Management | 31 | 4.56 |
| 30 | 4.68 | Negotiation Skills | 25 | 4.73 |
| 31 | 4.63 | Written Communication Skills | 23 | 4.88 |
| 32 | 4.39 | Quantity Take-Off | 36 | 4.03 |
| 33 | 4.10 | ***Ability to use Scheduling Software | 27 | 4.60 |
| 34 | 3.86 | ***Spreadsheet Skills | 33 | 4.42 |
| 35 | 3.84 | Cost Estimating | 39 | 3.93 |
| 36 | 3.73 | Understand Sustainable Materials | 37 | 4.02 |
| 37 | 3.70 | ***Management Software Skills | 34 | 4.23 |
| 38 | 3.69 | ***Word Processing Skills | 35 | 4.23 |
| 39 | 3.60 | Ability to Sketch | 41 | 3.78 |
| 40 | 3.29 | ***Typing Skills | 38 | 3.93 |
| 41 | 3.26 | ***Understand Building Information Modeling | 40 | 3.91 |
| 42 | 2.90 | LEED Accreditation | 42 | 3.20 |

*** = Significant Statistical Difference