



Evaluating the Benefits of Introducing Operational and Administrative Work Flow Processes

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1. Research Proposal

1.1. Proposed Project Title

An evaluation of the benefits and drawbacks of implementing workflow processes within the built environment.

1.2. Overview

The built environment sector has a varied compilation of generic service providers, with the scale of difference between different aspects of construction, there is no one single workflow process to fit all. From bricklaying to carpentry, working on different projects, with different materials, methods and tools to achieve a different purpose. and whilst all of these circumstances pertain to construction, no two are the same.

Adding to this mix the specialist niche service providers, often operating under unique circumstances, then we have an even more complex environment. To succeed in a career with such companies requires specialist knowledge and skills often over and above those that may be required for more generic build environment roles. Attracting and retaining good employees is important and whilst only time can create experience, perhaps a company can make efforts to aid this process? This raises an argument for the need of workflow processes. Would they make learning about a new profession easier? Or would they overcomplicate the learning process by providing too much information at once?

The researcher is newly employed by a fire suppression company, moving into a niche industry with no prior knowledge of the construction industry and so has the necessary knowledge of working without these processes in place and can consider both sides of the question.

1.3. Aims to be Tested

The hypothesis of this research project is to consider if the management of fire suppression projects could be enhanced in newer workers in this niche discipline by the provision of workflow processes.

1.4. Objectives

The aim of the project is to consult with colleagues, to review existing arrangements, to create and test a Beta version of an operational and administrative workflow process to consider and ultimately determine the impacts of introducing such on a larger scale.

A sample document will be produced, collated from internal sources. This document will be a workflow process instruction highlighting how to correctly place orders on the in-house order software within the researcher's company. This will then be distributed to some new and experienced staff to see if any benefits or better practices are observed, thusly highlighting firsthand the benefit, or lack thereof, of these processes.

1.5. Research Methodology(ies) and Justification:

Primary data will be sourced from colleagues and external partners in the form of interviews verbal questioning and online questionnaires. Interviewees will be selected based on the following criteria:

- Even distribution of age
- Even distribution of experience
- Even gender ratio

A fair distribution of age and experience will be needed, that is to say that as close to an even representation as is possible of both will be needed. The same will apply to gender also. This is due to the fact that any data that is gained from, say, ten men, aged between eighteen and twenty-five, with five years of experience will be less accurate and will lack the representation of anyone else in the industry and therefore data collected from a wider, evenly distributed selection will carry a more accurate representation of the overall industry.

I will also take consideration from forms of literature and research on this topic to broaden my information sources and to build upon solid groundwork towards my research project. Ultimately the potential success of introducing a full suite of operational and administrative workflow processes would see; improved performance of staff with correct internal processes followed from the outset. Additionally, although not measurable in the time available, improved statistics in the hiring and retaining of good staff.

1.6. Chapters

The chapters are initially envisaged as:

Chapter 1 – Introduction

Chapter 2 – Research Review

Chapter 3 – Beta Test

Chapter 4 – Conclusions of Findings

Bibliography

1.7. Information Sources

Information will be collated from colleagues and other industry professionals via online questionnaires and verbal discussions. This information will be stored in a secure, password protected file, as required by data protection laws.

Referenced information will be obtained from published articles & journals, as well as printed information from books.

The purpose of the different types of information would be to mix already established principles and findings and correlate them to the findings of the data obtained by the researcher from colleagues and professionals.

A mix of information retrieval from colleagues will be necessary due to the time constraints. The method to be used will allow for broader questions being presented to all parties via the questionnaire, and also allow for a more direct line a questioning of specific individuals to gain more exact information.

The questionnaire will be distributed via email or other preferred electronic means so as to make the storage of the information more practical to find and sort. It will involve questions pertaining to the perceived benefits of the implementation of workflow processes and instructions in the day-to-day operations of the employee. An audience with a range of ages and abilities will be engaged so as to understand any trends in terms of age, experience and ability with theoretical usefulness and need for the implementation of such aids.

As members of the fire suppression industry are being specifically targeted with my research, there will be selective targeting of people from within this industry in terms

of who the communicative research comes from, so as to gather information pertaining to the specified industry.

With regards to the beta testing data, it will be obtained from new and experienced employees of the researcher's company. It will contain a workflow process on how to correctly raise an order using the inhouse purchasing software.

After a week of implementation, the participants will then be given a questionnaire containing targeted questions to determine whether or not the workflow process' guidance matches the theoretical usefulness which will be deduced from the original questionnaire.

Positives and negatives of the implementation will then be noted to offer potential improvements needed to make this a worthwhile tool should this be carried out again in the future, with conclusions drawn based upon comparison of the initial questionnaire against the questionnaire regarding physical implementation.

A vital source for this project will be the analysis and expansion of a 2014 Dutch research paper named "The effectiveness of workflow management systems: A longitudinal study" by H.A. Reijers, I. Vanderfeesten and W.M.P Aalst. (H.A. Reijers, 2014).

2. Research & Literature Review

2.1. Independent Research Method

To gauge the current workplace situation regarding the use and inclusion of workflow processes, a questionnaire was given to sprinkler industry professionals to gain an understanding of the frequency of use, ease of use, accessibility and applicability of the workflow processes within different businesses, if they are at all made available.

The questionnaire required participants to state their name, age, industry experience and occupation, for categorisation of the results by these topics. There were 13 participants involved with the answering of this questionnaire, and they were of a broad variety of ages and experience levels. The short questionnaire is captured below:

Name					
Age	<18	18 - 25	26 - 35	36 - 49	>50
Experience	<1	<5	<10	<20	>20

	Rating					
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Comments
There are currently ample workflow processes available to me						
The workflow processes in place are easily to follow						
The workflow processes are informative and helpful						
I use the necessary workflow processes when possible						
I have input with the topics and information within the workflow processes						
My ability and knowledge is taken into consideration based on the complexity						
I understand the purpose of workflow processes and their uses						
I know what a workflow process is						
ADDITIONAL COMMENTS						

Fig. 1, Questionnaire

2.2. Independent Research Responses

There were some common themes from the responses seen in the questionnaire as, people who were in the same demographics provided similar responses. As the age went up, naturally so did the experience of individuals. A prime issue noticed was that the workflow processes in place were mainly focused on more complicated processes that needed breaking down for the sake of correct processes and actions being imperative. This led to the few workflow processes available to most individuals being very specific and not aimed at them and, in doing so, they didn't assist in their roles. This was because the younger and less experienced individuals were not targeted by these workflow processes and found them unhelpful and overly complicated for their roles, whilst the more senior and experienced interviewees already had knowledge and experience of the topics included and so didn't provide any additional advice nor value to their knowledge base.

The issue was not with workflow processes for more specific and advanced niche topics. The specific issue was that there were no real workflow processes for the basics of the interviewees roles that would benefit newer and more inexperienced industry professionals. From comments left in the “Additional Comments” section of the questionnaire, the issue of no real suitable beginner processes as discussed above was the most prominent issue raised within the less experienced demographic.

Whilst not an issue in and of itself, a concern for the accuracy of the workflow processes in place was raised by the older, more experienced demographic of the fact that, despite holding senior positions, they were not in any way involved with the making, reviewing or informational content of the workflow processes. They suggested that the processes came from the corporate side of their companies and were more generic guides on purchasing, legal processes and review processes. The available workflow processes were not specific to their industry and did not highlight any useful information on performing their job role nor help improve the overall awareness and knowledge of the industry they were involved in.

2.3. Literature Review

There are many benefits of using workflow processes in the workplace. They can be an invaluable tool for many areas of business. The main benefits would be:

- Easier training
- Increased efficiency
- Better communication
- Improved quality
- Increased accountability

Workflow processes will make training far easier and efficient for new and existing employees alike. This is due to the accessible nature of workflow processes, they will provide a solid platform for access at all times, providing timely reminders of a process or an easy, simplified piece of material to learn as part of a role.

Efficiency can be increased by workflow processes as they provide a streamlined process for everyone to follow and as such, in order to make it easy to follow for anyone, will be simplified as much as possible. With the process as basic and efficient as possible, it can be consistently replicated with ease with less opportunity to make

mistakes as “With established workflow processes in place, automated tasks and standardized procedures reduce human error, minimizing costly human mistakes” (Processmaker Consultants, 2023). Moreover, depending on the field of business implementing workflow processes, decrease average lead times of some activities buy up to 74% however on the flip side to this, the lead times of some complex activities could also increase by a similar amount (H.A. Reijers, 2014).



This graph contains data from the UK government study of from small and medium-sized enterprises (SME's). It highlights how time constraints and skill gaps impact productivity. With workflow processes only needing to be created once and potentially revised periodically, and them eliminate skill-based issues by spelling out a step-by-step process to complete a task, it negates the two most pressing barriers to efficiency.

Fig.2 Productivity Barriers (Bluewren Consultants, 2023)

Better communication is more encouraged when workflow processes are in use. This is due to an easier approach to progress reporting and best practices as communications on task progress can be given with the receiver knowing exactly where in the process the specific task is given that the process for all employees partaking it should be the same.

Improved quality can come of using workflow processes as they provide a standardised step-by-step instruction on how to complete various tasks. This mapped-out structure allows complexity, quality and division of tasks to be planned in advance and makes any instruction produced naturally higher in quality due to its more considered nature. Moreover, the clarity provided by the in-depth breakdown should help to eliminate any errors in the process. With workflow processes gaining popularity as a task in standardising quality and outcomes of processes, there, in 2014, was an ISO standard introduced for workflow process. ISO 12651 “defines terms and

concepts relevant to electronic document workflow management” and “It is intended to facilitate communication in the field of electronic document management and translation of the terms and concepts it contains into other languages.” (BSI, 2023)

The Association of Project Managers promotes that “clearly defined workflow processes could make it simpler to track the progress of assigned tasks” (APM, 2023), as it will be clearly laid out as to who is involved and at what stage. If there are errors or bad practices around a certain item, it will be far easier to determine who the issue arose from, leading to more accountability of individual tasks which in turn should provide a higher quality of finished task in the process.

However, there are negatives:

- Rigid processes
- No room for creativity or innovation
- Overreliance on technology
- Complexity
- Time and cost constraints

A drawback to using workflow processes would be that, as the process is mapped out and streamlined, it makes it difficult to account for any unexpected circumstances that stray from the set process provided. Furthermore, having only followed a mapped-out process, people may have an inability to adapt to situations due to a lack of knowledge and awareness in their role or industry.

An issue that could potentially arise would be the elimination of progression and creativity of methods as, obviously, the process in place would be well thought out and correct, leaving little to no room for different methods and collaboration to share and improve upon them, ultimately losing process to mediocrity

With so much automation involved and potential reliance upon the processes to either double check a simple process or for guidance on a more complex one, it could become difficult to carry on with even basic tasks if there were technological issues preventing access to the workflow processes.

For more standardised, simpler businesses and organisations, most, if not all, workflow processes will fairly straight forward. However, for complex uses, workflow processes can be very complicated to implement. From complex, multidisciplined

tasks to many different potential paths in the process, it can become time-consuming and potentially costly from both the perspective of the creation of the workflow process diagrams and the confusion caused by their level of complexity.

One of the main reasons found by a 2014 research paper stopping the implementation of workflow process was that businesses “ran out of time and over budget in a considerable manner” (H.A. Reijers, 2014). This coincides with and therefore reinforces the data found in figure 2, showing how time constraints are a driving factor behind low adoption rates of workflow processes, the adoption rate being 50% as per the 2014 research findings.

3. Beta Test

3.1. Beta Test Handout

A beta test for a workflow process was created and handed out to the recipients of the original questionnaire. Whilst not directly applicable to anyone’s work, its purpose was intended to solely be to gauge complexity levels and the flow of the process so as to gain an understanding of what works and what doesn’t when forming a successful work process.

The work process follows a common purchase sequence depending on the order value which would potentially necessitate approvals from employees higher up in a business’s reporting line. This topic has been chosen as it is fairly complicated and as such provides a good marker as to whether or not the below work process is simple enough for all levels of experience and knowledge to follow and understand, learning the process required for the action topic. Furthermore, the Chartered Institute of Procurement and Purchasing offer excellent guidance guides on this topic (CIPS, 2023)

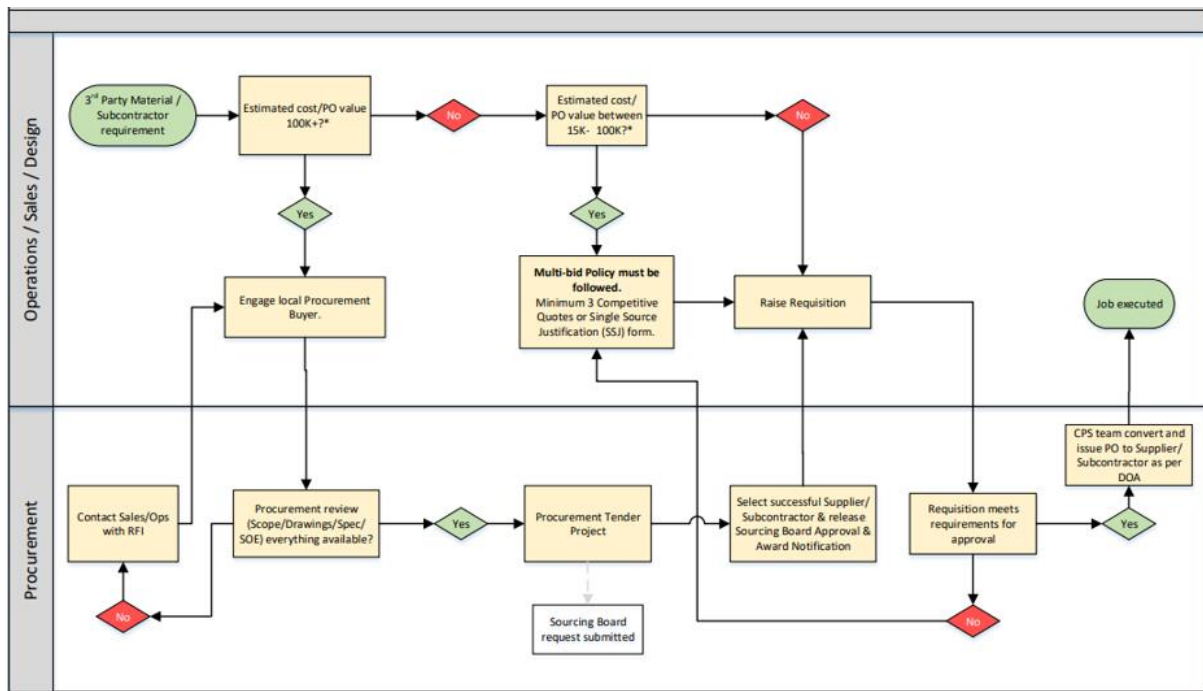


Fig. 3 Work Flow Process

3.2. Beta Test Research

As a follow up to the first questionnaire, a week after receiving the previously shown workflow process the recipients were sent another questionnaire. This time period was given as it allowed the interviewees to form opinions on what they had been sent to review.

The short questionnaire was sent across to gauge the opinion of the interviewees on how easy it was to understand the process being conveyed across within the workflow process diagram. It also provided those who had not previously received one to learn what they are and how they work, making it ripe to gauge the ease of use from a fresh perspective. The questionnaire given out is shown below:

Name					
Age	<18	18 - 25	26 - 35	36 - 49	>50
Experience	<1	<5	<10	<20	>20

	Rating					
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Comments
The format of the workflow process was easy to follow						
I understood the information included in the workflow process						
The workflow process was clearly laid out						
The language used was easy to understand						
Having workflow processes such as this will aid me in my job role						
Having workflow processes such as these available would help me learn faster						
ANY OTHER COMMENTS						

Fig. 4 Beta Test Questionnaire

3.3. Beta Test Responses

Twelve out of the fifteen interviewees said that having these types of aids readily available for a broad variety of subject matters applicable to them would improve their ability to do their job.

The majority of feedback highlighted the importance of simplifying the workflow processes so that they can be understood and carried out by anyone. The low to medium experience demographic focused their comments on the help that could be provided by having these in place when they first entered the industry. They emphasised the learning curve of entering a new role with new responsibilities within a new company and highlighted the ability to quickly bridge the gap that could be provided had aids such as the workflow process been readily available to them from the beginning of their career.

The more experienced demographic shared this opinion, but went further to comment that, given their vast experience, they sometimes forget the correct processes to carry out tasks and would like a tool such as this available to them to refer back to and refresh their memories. This highlights workflow process diagrams as educational tools for all manners of experience

4. Conclusion of Findings

4.1. Conclusion of Literature Review

From the research contained within this section, several conclusions can be drawn. Firstly, the implementation of workflow processes needs to be considered and planned out long before it is actioned. Processes to be included need to be adequately and correctly prepared as these are processes that should be strictly adhered to.

Workflow processes can be very beneficial across multiple aspects as they also indirectly benefit other areas. For example, even though they are designed to make processes simpler by providing a clear path of execution, they can also encourage better communication in the form of collaboration in order to better improve the processes, building on other ideas to better how certain tasks are carried out.

As highlighted by Fig. 2, the biggest factors affecting productivity in SME's in the UK are time and skill. Workflow processes could be very beneficial for these enterprises for a few reasons. Firstly, a workflow process only needs to be made once and, whilst it will need revision over time to adapt to changing landscapes and thusly the time constraints to boosting productivity could be mostly nullified by the implementation of workflow processes. Secondly, the issue of skill could also be largely eliminated as workflow processes are simple to conceive and create or alternatively outsourced. Once implemented, it will take reduced skill to carry out the tasks and processes as they are plainly spelled out. However, the process of planning out the descriptions and tasks can be time consuming and as such may prevent SME's from implementing due to their issue with time availability.

The standardisation of workflow processes can and should be achieved via organisations such as the British Standards Institute (BSI), Chartered Institute of Procurement and Supply (CIPS) and the Association of Project Managers (APM).

4.2. Conclusion of Independent Research

The takeaways that can be made from the initial independent research, if a business or organisation were to be looking at beginning to incorporate or enhance their workflow processes, are reasonably simple to incorporate to make them informative and beneficial and, therefore, boost knowledge and capabilities. Firstly, tasking the

more senior members of staff to create them with a specific focus on basic knowledge and processes aimed at the newer, less experienced employees to make integration into the industry and business a more seamless transition. Secondly, the workflow processes should not be limited to specific, complex subject areas. Instead, they should encompass all aspects of the business. The effectiveness of this could be furthered if surveys or messages are sent out to gauge what areas the workers lack understanding in and, thusly, require these documents in.

4.3. Overall Conclusion

The overarching conclusions that can be taken from both areas of research are that there are certainly positives and negatives. It appears to be linked to which use the workflow process is being applied to. For simpler process that should, in theory, have less tasks in the process such as procurement or say completing time sheets then, they can be useful and increase speed and efficiency of task. However, in instances that would require a more detailed, complicated and in-depth workflow process such as engineering processes, it can become detrimental and actually decrease the lead times for the completion of activities.

Overall, it is apparent that deeper consideration than was originally theorised will be needed. Simpler tasks should see the most benefit, whilst more intricate tasks could even be negatively affected by the integration of workflow processes. Therefore, for the purposes of basic education on processes, integrating a workflow process for a simple, standardised procedure, workflow processes see a recognisable and measurable increase in efficiency and as such should only be used for this, as the inverse of tasks, meaning those more complex, see a clear detriment to their efficiency.

5. Reflection Journal

Development

There have been certain challenges to completing this project that have improved upon existing skills such as problem solving, sourcing and communication skills. Problem solving skills needed to be utilised when ironing out the issue with questionnaire response format issues in order to mediate and find a solution that was

appropriate to the situation. The ability to find and source information from sources and locating the sources themselves definitely saw resourcefulness of sourcing information improve as well as maturing in terms of understanding how to use said sources and their corresponding information.

Time management has been a problem, as a full-time working apprentice, who is often working away from home, it has been a challenge to find sufficient time to write the project and conduct the individual research. This project has forced development in time management skills to make the most of the time available and to use it as efficiently as possible.

Successes & Failure

There were a multitude of successes within the project. Firstly, whilst sources available were limited. They provided good information and statistics that could easily be discussed and provided a good addition to points already being discussed. Another strong point for this topic was the ease with which points could be considered due to agreements between sources used.

Fortunately, not too many issues were present during the research for this project. There were minor issues with the independent research, namely with the questionnaires. Fifteen questionnaires were handed out and, of these, only thirteen were returned. Furthermore, there were issues on the returning of questionnaires digitally as some had been scanned into formats that were unopenable on most PDF readers. Another minor issue was the scarcity of sources, although the quality of source was good, with a low number of them available it negatively impacted my ability to frequently use information to back up points.

Future Changes

If I were to do the project again, I would potentially change the topic to something more well known and less specific. Whilst this hasn't been majorly problematic for this project, it did narrow the list of available sources. Whilst the quality of source has been high, the overall volume was heavily reduced from what one would expect from more well-known areas. Moreover, I would have increased the amount of people who were surveyed so as to provide a more in-depth data pool which, in turn, would have increased reliability of the data.

Changed or Strengthened Ambitions

In the case of hypothesis going into the project, it turned out to be correct based on analysis of the sources and the responses collected from the questionnaires. This has furthered and firmed my ambitions of petitioning for the adoption and inclusion of workflow processes within my area of work in my current job role as they would very much aid in my furthering of capabilities and knowledge base, as well as the help they could provide everyone, more so newer members of the company due to the complexity of construction discipline I am currently working in.

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