Tampere University of Applied Sciences

Operations manual creation and maintenance for Metso

Miguel Duarte Ribeiro

BACHELORS THESIS
April 2024

Bachelor's Degree Programme in International Business

ABSTRACT

Tampereen ammattikorkeakoulu
Tampere University of Applied Sciences
Bachelor's Degree Programme in International Business
Option of Supply Chain management

MIGUEL RIBEIRO
Operations Manual creation and maintenance for Metso

Bachelor's thesis 54 pages, appendices 7 pages
April 2024

This thesis was commissioned by a global company operating in the fields of technology and services pertaining to the mining, aggregates, recycling, and metal refining industries. The purpose of this thesis is to provide the company with a recommendation as to how to create and maintain a centralized repository/manual for all operational and procedural information to be shared with all the stakeholders.

The author of this thesis conducted an extensive theoretical review pertaining to the subject, providing an ideal structure for this project realization. The manual creation process ideally should be done in four distinct stages and for this project a project manager and several writers should be appointed. In today's digital world the manual should be provided in an online platform using a LEGO approach. This approach allows for the manual to be constructed with individual "bricks" and these bricks are liable to be changed independently without the need to re-structure the whole document.

Based on the insights gained from the theoretical review the author developed and conducted expert interviews and a questionnaire to draw insights from both upper-level employees and from the general workforce. Both the expert interviews and the questionnaire revealed unanimous agreement on the necessity of a centralized operational manual for Metso's DMO Quotation and Order Management teams. Participants emphasized the importance of structured project phases, optimal team composition, and iterative refinement processes. Ultimately this project would significantly improve on the current situation, where participants highlighted challenges in accessing information and the need for clarity and consistency in the instructions available.

In the end, the author presents a thorough recommendation on how this project should be undertaken by the company. Initially the company should select the team and define the scope of the creation process with a Gantt chart. Following the actual writing process, a pilot-phase should be carried out with both experienced and newly employed users to refine the document. The whole creation process should take between one and one and a half years with annual revision and updates. The efficiency of the new manual should be followed with key performance indicators such as response times, consistency of outcomes and on-time deliveries.

Keywords: Operations Manual, Centralized repository, Quotation, Order Management, KPI, Quality Function, LEGO approach

CONTENTS

1 INTRODUCTION

This thesis was commissioned by Metso, a global company operating in the aggregates, mineral processing, and metal refining industries. The company currently employs over 16000 persons in more than 45 different countries spanning 6 different continents. In 2022 the company reported 5.3 billion sales by providing services, products and technology to its customers and partners (Metso:Outotec 2022).

In the competitive markets that Metso operates in, efficiency and consistency in customer order handling and quotation providing are of crucial importance to differentiate and elevate the company above its competitors. Information sharing is critical for an organization to remain competitive, and it requires free flow of information amongst the members of the organization (Hatala and Lutta 2009).

With the above-mentioned statement in mind, this thesis will focus on providing a guideline to improve Metso's information sharing processes and methods. This will be done by elaborating on how to create and maintain a manual for all the operational processes pertaining to order management and quotations, to be used by all the stakeholders.

The need for improvement in this area was identified by the author during his ongoing tenure as a member of Metso's distribution management organization (DMO) as a quotation and order management (QOM) specialist working in the Europe, Middle East, and Africa (EMEA) team. The author has identified several inconsistencies and access difficulties pertaining the necessary information related to the operational processes to effectively execute some of the daily tasks with consistent outcomes.

Through multiple discussions with the commissioner, it was agreed that a study on how to better organize said resources was necessary, to improve the consistency of the operational procedures and their outcomes and facilitate the access to information to all internal stakeholders.

The operational processes in focus in this thesis, will be related to two different but connected areas, order management and quotations. Their description and operational differences are detailed in this document. Identifying prevalent challenges in accessing procedural instructions is crucial for improving organizational efficiency.

The following issues commonly arise during searches for procedural guidance in Metso: outdated information, inconsistent or contradictory instructions, inconsistent presentation, lack of detail, missing stakeholder information, and difficulties in locating information.

Considering these challenges, the thesis aims to propose recommendations for organizing existing procedural instructions and establishing protocols for their maintenance. Additionally, it will offer guidance on how to have a systematic methodology for incorporating and updating both existing and new instructions.

In this document the author begins by describing how this thesis was planned, what is the research question that it targets and, what are the research methods utilized to obtain information and draw conclusions. In the section following the initial description, the author presents all the literature and scientifical research done to target the objective.

After the literature review is presented, the results stemming from a combination of qualitative and quantitative questionnaire are described and this will illustrate information obtained from the stakeholders both on management and operational level. With this the author intends to justify the research question and draw data to present a recommendation.

The recommendation will highlight the importance of a centralized and accessible platform for maintaining all documents related to Metso DMO’s QOM processes. It will also give practical tips for each individual parts of the creation and maintenance processes. To conclude, the author presents the limitations and validity of this research and also advises on further studies on this topic.

2 THESIS PLAN

This section of the thesis will explain the purpose, the objectives and scope of this document. It will also detail the different data collections methods used in this research and describe them in detail.

2.1 Research question and purpose

The purpose of this research and thesis is to improve the commissioner's current operational instructions dissemination. The purpose of thesis can be described by the following research question:

"How to create and maintain a centralized repository for all the procedural information related to DMO's Quotation and Order Management teams in Metso?"

The relevancy of this question is justified trough an examination of the importance of having a centralized document for all stakeholders and how it can improve the current situation. By improving the current system, the company will obtain consistently better results, decrease the overall time of execution, increase worker autonomy, satisfaction and ultimately, also reduce labour costs.

When workers have access to all the instructions necessary in a quick and trustworthy manner, this will increase their confidence, decrease the time lost in searching for said instructions and ultimately allow them to be more independent and efficient in their daily tasks. As mentioned by Taylor et al. (2003), worker autonomy is one of the main contributing factors to worker satisfaction and efficiency.

All these improvements will also be measurable by analysing different key performance indicators (KPI's) related to customer satisfaction and operational quality, as consistent, timely and correct operational processes will reduce errors, increase accuracy of quotations, and reduce process time for customers wishing to have their orders managed and/or quotations handled.

2.2 Objectives and scope

The objective of this thesis is to improve the sharing of information related to the internal processes of Metso DMO department. The aim is to provide a recommendation to the commissioner on how to organize, disseminate and maintain a repository/manual containing all the relevant operational information pertaining to the DMO's QOM teams. The current operational information related specifically to DMO is often scattered in different platforms, it is sometimes outdated and at times hard to navigate with a lot of inconsistencies in their presentation. It is safe to assume that the above-mentioned factors lead to inconsistent processes, inconsistent outcomes and to time and resource wasting, leading to customer/worker dissatisfaction.

Currently, to access said information the specialists must look for it with related keywords in multiple applications/platforms. In addition, often the specialists must ask co-workers if they have previously used any related information and where to find it, as just using keywords might not provide the desired results. It is important to note that Metso currently has a Guidebook, that is outdated, hard to navigate and contains a lot of information that is not related specifically to DMO's QOM teams which is the target of this thesis.

The scope of this thesis includes a scientific literature review pertaining to the creation of manuals and repositories of information for operational procedures and processes. The data collected to answer the research question focus specifically to the quotation and order management processes of the DMO department of Metso. With that in mind, the research is done based on results from those teams.

2.3 Research Approach and methodology

In this study, a mixed-methods research approach was used. This meant combining both qualitative and quantitative methodologies. Qualitative data was collected with expert interviews with managers from various teams within the quotations and order management department. Quantitative data was mainly col-

lected by administering questionnaires to the workforce engaged in daily tasks related to quotation and order management.

The target audience for this study was employees working within the QOM departments at Metso, including both frontline staff, upper level staff and their respective managers. Prior to participation, the voluntary participation was ensured by asking a participation consent from everyone involved. Participant were also informed about the anonymity of all answer. Prior to the interviews with the management, permission was asked to record the interview to facilitate posterior data analysis.

The data collection process contained a range of question formats. These included close-ended questions featuring multiple-choice options and Likert scale ratings as well as open-ended questions. The results consisted of 37 questionnaires to be completed by frontline workforce members. In addition, six expert interviews were conducted with managers and senior members from various teams within the DMO’s QOM departments.

Statistical techniques such as percentages and descriptive statistics were used to analyse the quantitative data collected from the close-ended questions. These methods were used to show trends, patterns, and numerical summaries, providing a quantitative understanding of the subject matter. Additionally, qualitative data obtained from the open-ended questions was processed focusing on content analysis.

3 LITERATURE REVIEW

In this section the author provides first an introductory description of some of the main concepts that are used in this thesis. This will provide the reader with a better understanding of some of the concepts and it will also help the reader to better understand the context in which they are relevant. Further, the literature review explains key features of operational manuals and their suitability to corporate world.

3.1 Quality of processes, operations and KPIs

To better design the recommendation of the operations manual it is important to understand some of the principles surrounding quality and how to measure and use quality related information to optimize operations, optimize processes and determine how they are disseminated. The following is a brief description of some of these concepts and it aims to set the stage for the recommendations ultimately done in this thesis.

3.1.1 Quality function, quality control and improvement

According to Pyzdek and Keller (2012), the quality function refers to all the actions we take to ensure that a product or service is suitable for its intended purpose, regardless of where these actions occur. Quality is affected by various departments, and many share the responsibility for it. Usually, the quality department plays a supporting role rather than the primary one. Although the quality department has its specialized tasks, quality-related activities are spread across the organization.

The term "quality function" refers to all the activities, both within specific departments and across the entire company, that contribute to ensuring the quality of products or services (Pyzdek and Keller 2012). Quality control is how operational staff make sure their processes match the product and service standards set during planning. It works as a feedback-loop and involves assessing real performance, comparing said performance with the targeted goals and lastly acting based on the established differences. Based on quality control, compa-

nies then design quality improvements aimed to improve previous processes and with it reach higher levels of performance. In short, the goal of the quality function is to manage quality across the entire company. Quality management involves recognizing and overseeing the actions needed to reach the organization's quality goals.

To stay competitive, there are two main approaches a company can take in relation to quality. The company can provide better perceived quality by creating product specifications and service standards that better match what customers want compared to competitors. The company can also achieve better conformance quality by being more successful than competitors in meeting the right product specifications and service standards. These methods aren't separate and successful companies do both at the same time (Buzzell and Gale 1987).

A case study from Jaiswal (2017) presents a case where the quality function deployment (QFD) was implemented into a manufacturing process. This case study found both pros and cons pertaining to this implementation. The benefits found surrounded the fact that it provided a great reduction in development time cost, and it shortened the design cycle and its changes. It also significantly reduced the start-up problems, times, and costs. This deployment also improved the internal communication within the organization, bringing unity between different teams and reinforcing the importance of teamwork and participation.

Obstacles include the challenge of establishing a clear link between customer requirements and technical specifications. Many organizations limit the application of QFD to the initial product planning phase, overlooking its potential benefits in later stages. Additionally, QFD relies on qualitative analysis, which can introduce subjectivity. Interpreting customers input poses a particular challenge, as responses often lack clarity and may not align with predefined categories of demand.

3.1.2 Cost of Quality principle

Cost of quality can be explained as any cost that could have been avoided if the quality were perfect (Pyzdek and Keller 2012). This definition involves more obvious costs such as scrapping and re-working, but it also includes a platitude of

less obvious costs such as productivity and employee moral costs and loss of opportunity costs. More specifically, quality costs refer to expenses directly linked to the attainment or lack thereof of product or service quality. These encompass all requirements set by the company and its contracts with customers and society.

3.1.3 Key Performance indicators

Key performance indicators (KPIs) are metrics of accomplishment that can be attributed to an individual, department, or team. The most common KPIs can be divided into four wide categories: customer-based, internal process, learning and growth and financial (Heery and Noon 2008).

According to Pzydek and Keller (2012) these may be further described as such:

Customer: Commonly customers evaluate a supplier in four comprehensive categories, Quality, Performance, Service and lastly Value. With customer feedback in mind, companies define internal goals and develop operational metrics based on them.

Internal process: Internal processes are metrics familiar to operational personnel. Aligning operational metrics with strategic objectives is crucial. Metrics such as process cycle efficiency and Overall Equipment Effectiveness are valuable for assessing internal performance and resource utilization.

Learning and growth: Learning and growth metrics may include dollar savings from continuous improvement projects, development time for new products or services, enhancements in employee perspectives or quality culture, and revenue or market share gains from new products.

Financial: Financial metrics are very heavily scrutinized and widely tracked. These may include revenue, profitability, operational costs, market share and so on.

3.2 Applications and tools used in order management and quotations

Before proceeding with a more concrete description of the processes of order management and quotations, it is important to describe the tools used in their realization. The specialists use combination of applications and databases to conduct their daily tasks and ensure quality and reliability to them. The below is a list of said applications and databases, with a brief and broad description of their functions and usage in the context of order management and quotations to provide the reader with some context:

SAP – SAP, short for Systems Applications and Products, is a popular enterprise resource planning (ERP) software used by businesses. It centralizes data access across departments, improving workplace efficiency. SAP is one of the most used tools in the daily tasks of the QOM specialists and it allows specialists to realize a multitude of tasks related to their daily responsibilities.

This program is used to create and maintain customer records and information. It is used also as a warehouse management tool, providing information related to parts availability and its technical specifications in all the locations within Metso. Specialists use SAP also to create manual sales order confirmations (SOC) and manual quotations and to provide the specialists with all the accompanying documentation, such as, invoices, quotations, purchase orders amongst others.

ATON – ATON is another ERP tool that provides the user with a database related to parts, materials and machines in use or produced by the company. In the context of quotations and order management, ATON is used by the specialists to obtain technical information pertaining to materials and parts.

ATON is mostly used in the quotation scope in a broad manner. The tool allows for compatibility checks pertaining parts, for specialists to obtain part descriptions and specifications, provides the specialists with documentation and information pertaining to the parts, such as, technical drawings, technical/commercial information and part/machine specifications. ATON is also

used to check for obsolete or replaced parts and to print bill of materials (BOM) to have all the components or certain materials and machines.

SalesForce – SalesForce is a customer relationship management software (CRM) used to monitor and record information related to cases and tasks. Used daily by the specialists, this tool serves also as communication platform between departments inside Metso allowing for the creating of support tickets between them. Used also to measure some KPI's, SalesForce stores and displays information related to most cases, communications and actions taken throughout case completion. In the context of QOM salesforce is also used to record and track all communications with customers and to archive them for posteriority.

Microsoft's Outlook Express – Outlook Express is an email management tool used by the specialists to receive and send emails to both internal and external stakeholders. In the QOM context, specialists use 2 different email addresses, a personal one, used mostly to communicate internally within Metso, and a common address that is accessible to all team members. This common address is where all communications with distributors should be sent to and from and also maintained. This is done so, that all team members have access to said communications to mitigate issues that could stem from absences and to allow also for full visibility to the management of the ongoing cases and queries from the distributors. This shared email box is also a valuable information resource, as specialists often use it to search for information and previous cases like the ones they are handling.

Metso Transportation Gateway (MTG) - MTG is a browser application tool that, in the context of QOM, is used to track orders in a logistics scope. Specialists can see how their orders are progressing during and after the transportation booking. In MTG they can access the logistics service providers (LSP's) tracking systems and verify in real time the transportation status of orders. MTG can also be used to provide estimations of transportation costs for different transportation methods. This allows specialist to inform the distributors of potential transportation costs and estimated lead times for the delivery of the inquired materials to their desired destination. On MTG, specialists can also find docu-

ments like proof of deliveries, packing lists and several other documents related to customs in the application. Lastly, in some cases, the direct tracking links from the LSP's can also be found on MTG in case the specialist wants to confirm the accuracy of the information or share it with the distributors to provide more accurate tracking.

MyMetso.com - MyMetso.com is the company online portal used by both specialists and distributors. MyMetso is the platform where distributors can request quotations, place orders and track the development of said orders without the need for the intervention of a specialist. It is also used to visualise and download documentation related to all the orders and quotations, such as invoices, SOC's and all the relevant and non-confidential information. This portal can also serve as a technical information library providing distributors and specialists with and installed base database, that allows for both parties to verify and access all equipment information relevant to a specific distributor.

Various on-line technical libraries and databases – During daily operations, the specialists have access to several online databases with technical information related to machines and parts. These databases provide the specialist with specific information pertaining Metso's and partner's equipment's and allow the specialist to investigate compatibilities and specifications to aid in the quotation and order placement processes. These databases are also used to provide distributors with a multitude of pictures of parts and with complete spare part books and manuals that are available to be shared. In this context, there is a specific database with all the bulletins related to materials and changes. These bulletins are used to inform the customers/distributor about changes to specific materials, machines and to provide guidance to upgrades and add-ons to the distributor's equipment's.

3.3 Order Management

Order management is a wide process that includes the management of all variables in the supply chain during the preparation of an order, from preliminary cost offer to its final placement. After the order is received, order management is carried out in coordination with the supply chain management (SCM) to com-

plete the process and have the order fulfilled (Günsari 2022). To simplify, order management can be defined as the tracking of orders from their origin to their realisation, and the management of the people processes and data connected to the order as it develops (Kokoris 2018).

In Metso, the process begins with the receival of a purchase order. This purchase order can be given to be placed manually by a specialist or it can be placed directly in the company's portal (MyMetso.com) by the customers/distributors. Orders placed on MyMetso will flow automatically to the system and will proceed without intervention required, with some exceptional situations.

Manual orders are given to the order management team in several different formats (PDF, Excel file, Snip etc.), and they are requested when the distributor cannot either place the order in MyMetso or they requested some special consideration pertaining to the order. This can mean, special price agreement, different sourcing plant than the one available on the portal or lack of availability of the desired materials on the portal.

After an order is placed and validated, the distributor receives a sales order confirmation (SOC). This document contains key information regarding the order. It includes a unique SOC number for tracking and billing information specifying payment details and terms is also provided. Customer information, including the account number, is included. The delivery address for the end customer is specified and details regarding Incoterms and the chosen method of transportation are outlined. A comprehensive list of the purchased items with pricing details is also included. Lastly, an estimated delivery date is provided outlining also the type of delivery requested, whether complete or partial. This structured documentation streamlines the order fulfilment process, ensuring clarity and accuracy at every step.

The process of order management in Metso also includes the monitoring of the orders until the point where a delivery is formed, and the order then passes on to the logistics department to be booked according to its specifications. The most common requests from distributors regarding order management include placing manual orders, adding or removing items from existing orders, confirm-

ing delivery dates for existing items/orders, changing delivery addresses on already existing orders, improving lead times on existing orders, and ensuring timely packing and booking of orders.

The process of placing a manual order starts when the specialist receives a purchase order (PO) from the distributor. The specialist then will use SAP to insert all the necessary data related to this request. This includes customer number (containing all the information pertaining to the buying party including contact information and pricing terms), the shipping address, incoterms to be used, materials and quantities, forwarding agent to be used and lastly the priority of the order (Standard, Express or Breakdown). Once all this information is inserted and validated by SAP, the specialist can save the order and print the SOC to provide the customer. Upon sharing this SOC, the specialist will also inform the distributor of the expected loading date for the materials, providing them with an expected timeline for the reception of the materials.

This concluded the broad description of the daily tasks related to order management and it is important to note, that there are exceptional tasks and requests. These are not mentioned in it due to their infrequency making them irrelevant to provide the reader with a general idea of the daily work of the team.

3.4 Quotations

A request for quotation (RFQ) in the business-to-business (B2B) scope is a process that is initiated by the potential buyer to obtain specific information pertaining a service or product. These specifications include price, lead time for delivery, quality, quantity requested, delivery and payment terms amongst others (Leung 2019). A quotation is a written document issued by a seller to a buyer, presenting goods or services at a specified price and under certain conditions. These documents are not legally enforceable, and it is up to the customer or distributor to decide whether to accept the quotation or not.

In Metso, an RFQ can be done in two ways. Similarly to the placement of an order, an RFQ can be done directly in MyMetso or it can be requested from a specialist by sending an email communication to the QOM team. There are

several reasons why distributors occasionally request manual quotations. At times, the materials they want to have quoted are not available on the portal, other times the materials miss pricing, or the customer/distributor is not sure of what material is needed.

When a manual quotation is required, the distributor should send an email query containing specific information. This includes the machine type in question, the serial number of the machine, part description, necessary quantity, priority of the request (urgent or standard), photos or drawings of the part requested, and specific pages of the machine manual or spare part books if they are available. All this information will assist the specialist in ensuring that the correct information is provided to the distributor and that there are no compatibility issues in the parts, materials or machines offered.

To better describe the process of placing a quotation let's imagine first a scenario where the distributor is sure of the part number they are requesting, but the material is not available in the portal. In these cases the specialist must first use ATON, using the information provided by the customer. ATON will assist the specialist in locating the part in the machine, provide images and technical drawings of the parts and allow the specialist to confirm that the parts requested are valid. Once this validation is done, the specialist will then use SAP to create a manual quotation.

Once the distributor is provided with a manual quotation, the specialist will create a request for the technical support team responsible for MyMetso. This team to will make the materials available on-line to the distributors, so they can then place the order. In some cases, materials are not "extendable" to the distributors, and they must ask the specialist to convert the quotation sent into an order manually.

One more common scenario when handling quotations is when the distributor is not sure of the parts they need to order. In these cases, the specialist must request all the information available from the distributor. This includes information such as machine type, serial number, approximate part description and possibly even pictures/drawings of the desired piece. With this information the specialist

will use again ATON and all the material databases to try to locate the correct part. This process can be quite wide-ranging, and the specialist might have to search all the different databases related to parts and machines. Once the specialist identifies the correct part, a quotation is sent to the distributor, with all the information related to the search. With this the distributor will be able to confirm compatibility and will then decide whether to place an order or not. At this stage the specialist also informs the distributor if the materials are available on-line or if the distributor must place a manual order.

This concludes the broad description of the quotation process, but it is important to note that there are exceptional situations and procedures not described due to their lack of relevancy to provide a general picture of the process. For these exceptions, the specialists often need to rely on colleagues or the Metso Guidebook that is currently out of date.

3.5 Operations Manual

After describing the broad scope of the daily tasks used in Metso DMO QMO team, the following section will focus on the theoretical review done surrounding the topic of operations manuals. The author identified several different topics that are relevant in this context and below the reader will be provided with the concepts and definitions necessary to aid in the comprehension of the topic.

3.5.1 Definition and division of labour in creation process

According to the Cambridge dictionary, an operations manual is defined as "a document that describes in detail the processes and systems that a company uses to produce its goods and provide its services" (Cambridge Dictionary, accessed 14.3.2024). In other words, the operations manual serves as a comprehensive guide to the fundamental concepts and daily tasks within the organization. At best, it serves as a vital resource for both employees and employers.

For employees, the operations manual should serve as a guide on how processes and protocols are done according to company policies. The usage of operations manual should increase the workers' independence by acting as

support material for daily tasks. The manual can become particularly helpful in the training of new employees. Following the guidelines that are written in the manual ensures a smooth onboarding process and aids the absorption of new tasks. When manuals are used from the beginning on, the everyday usage becomes a norm and slowly manual usage is incorporated in the company (Gappa 2007). Moreover, this manual can act as a constant database that also experienced employees can utilize. For example, it can offer guidance in times of uncertainty or when replacing colleagues' work.

For employers, the operations manual offers a sense of security, reducing reliance on individual workers. The manual will be providing a standardized framework for performing different tasks and this will ensure consistency in the company polices. In the absence of experienced workers, a well-crafted manual can not only orient newcomers but also maintain operational uniformity and maintain quality standards. The operations manuals include essential components such as how-to procedures, item locations, contact information, and business policies (MacNicoll, 2011).

Both Larson (2008) and MacNicoll (2011) emphasize the importance of avoiding manual rewrites and instead referencing existing manuals to simplify maintenance efforts. The testing phase of manuals is essential, involving pilot runs with select employees to gather feedback and refine the manual's usability. Additionally, the size and structure of the company plays a significant role in operations manual creation. Smaller firms may combine administrative and operational processes into a single manual, while larger corporations may require division into multiple subsections to accommodate complex operations (Gappa, 2007). Ultimately, the operations manual helps with organizational efficiency, providing clarity, consistency, and resilience for operational task forces.

During the creation of an operations manual, it's essential to establish clear roles and responsibilities to ensure that the process is successful and that every participant is appropriately chosen. Firstly, and most importantly, a project manager should be appointed (Gappa 2007, MacNicoll 2011). However, it is crucial to note that the project manager should not, in every case, be responsible for the actual writing but its position it to oversee the process. Project manager’s

responsibilities include defining the manual's scope, identifying the target audience, specifying the document's purposes, and providing existing information material to the manual writer. In some cases, the project manager may also take charge of specific subject matters within the document or delegate this responsibility to another team member.

Regarding the manual writing, larger corporations typically assign this task to a dedicated individual or team. The writer, ideally, should be selected from the company staff and it should be someone who can devote sufficient time and attention to gathering, organizing, and writing the manual's content. However, in larger organizations, creating the manual can be a large project that requires external expertise. Hiring an outsider to write the manual offers the advantage of an external perspective, identifying areas that may require clarification or more detailed inspection. The writer, whether internal or external, must focus on delivering clear, concise output aligned with the company's intended specifications.

In order to gather more insights and different perspectives, other people than the writer and the project manager can and should be consulted. For example, onboarding trainers have generally good insight into the common challenges faced by new employees entering the company (Gappa 2007). In general, it is important to identify different team members that can point the writer's attention to different crucial aspects related to the manual writing, based on their experience in the company. By clearly attributing responsibilities for the project manager and writer, organizations can ensure that their operational manual is created in an efficient manner and fulfil all the requirements by the company.

3.5.2 Operations manual creation process

The creation process of an operations manual is a major step for any organization seeking to modernize its operations and ensure consistency in its practices. The creation process is commonly divided into four distinct phases (Gappa 2007). These phases serve as a structured framework for guiding the various tasks and activities involved in creation process. Furthermore, the aim of dividing the process into separate steps is to help efficient management of the pro-

cess. In Figure 1, an overview of the entire process is presented, providing a visual representation of the sequential steps involved in the process.

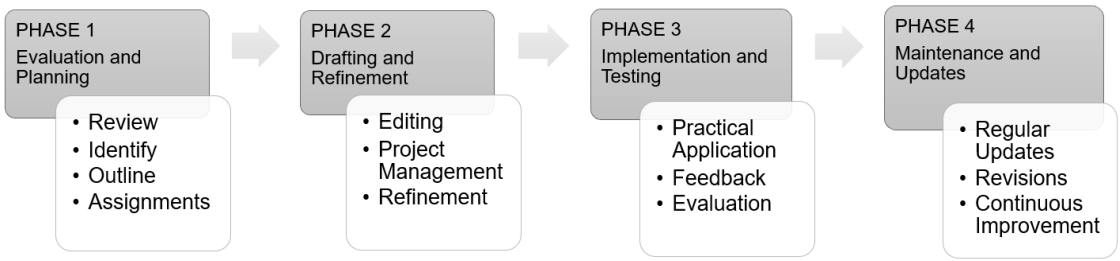

Figure 1. Overview of the creation process of Operations manual.

During Phase 1 of the operation's manual creation process, the first step involves evaluating existing materials by gathering all current manuals for review by the designated writers (Gappa 2007). This phase aims to identify all relevant procedures and protocols required for the operations manual as well as areas within the operating system requiring updates. The end goal of phase 1 is to have a comprehensive outline of the operations manual so that each individual piece has been carefully evaluated. Evaluation should focus on determining if a piece of document requires no changes, rewriting, additional information, or complete documentation. To efficiently complete the phase 1 of the operation's manual creation process, a report summarizing phase 1 outcomes should be done as a guide to subsequent phases.

Phase 2 of creation process focuses on creating the first draft of operations manual (Gappa 2007). A Gantt chart can be used to assist controlling the progress of the writing process. A Gantt chart is a visual representation of project tasks, their durations, dependencies, and responsible parties. It serves as a tool for project planning, presenting task arrangements, resource allocation, and allowing for the monitoring and management of project progress during execution (Hall and Johnson 2003). The project tasks identified and outlined in the Gantt chart are now allocated to specific people. Perhaps most importantly, a project manager is appointed to oversee the operations manual creation project. Acting as an editor, the project manager evaluates the writing of individuals assigned to specific sections. Furthermore, this phase focuses on refining the initial drafts to align with the organization's standards and requirements.

Phase 3 of the process is dedicated to editing and refining the operations manual. Upon completion of the initial drafting and editing phases, Phase 3 involves implementing the manual into real-world scenarios (Gappa 2007). The manual is distributed to a restricted group of individuals, allowing for practical application, and testing in everyday operational contexts. Pilot-users are asked to give feedback, and this helps to refine the manual further. The aim for phase 3 is to ensure the effectiveness and practicality of the operations manual in various situations.

Once an operations manual is created, it must be continuously updated and maintained for it not to lose its purpose. Therefore, the phase 4 of operations manual creation process focuses on maintenance and updating (Gappa 2007). This involves establishing protocols and procedures for regularly updating and revising the manual to reflect the changes in the organization's processes and policies. It is important to underline how often and by who the manual will be updated. Furthermore, it is important to establish a way to effectively communicate the changes to the employees. Continuous maintenance ensures that the manual remains relevant, accurate, and useful over time.

3.5.3 LEGO approach for operations manual

In modernizing the creation of operations manuals, Larson (2008) introduces an innovative approach like assembling LEGO bricks. This LEGO-inspired method offers a refreshing perspective, thinking of manuals not as static documents but as dynamic constructs built from individual pieces that can be effortlessly combined and adjusted. Unlike traditional manuals that require extensive rewriting for modifications, the LEGO approach stands up for a modular design. Each segment of the manual functions like a LEGO brick, capable of being integrated or disassembled as needed. Consequently, the process of updating becomes more efficient as only specific sections require modification, avoiding the tedious task of reworking entire documents.

Moreover, this approach transforms manuals into online platforms that can contain more than simple diagrams and text. Adding instructional videos, interactive checklists and customizable forms become possible. Therefore, this approach

allows integrating versatile tools to the operations manual. Therefore, the LEGO-inspired manual offers a comprehensive learning environment tailored to diverse operational needs.

Reusability is one of the key concepts in the LEGO approach. Procedures and guidelines, crafted as individual LEGO pieces, can be employed across many contexts without repetition. By managing content equivalent to a database, the approach reduces the creation of overlapping documents. Furthermore, the LEGO approach creates a networked system where information can be seamlessly shared across multiple locations within the manual rather than duplicating information or resorting to inconvenient cross-referencing. The most appreciated feature is the fact that updates made to the master file easily spread throughout the manual, maintaining consistency and accuracy.

When using the LEGO approach, organizations can make custom manuals that fit their specific needs better. By putting together modular components, they can construct manuals that suit various operations better. This will ultimately make things clearer and more efficient. In essence, the LEGO approach has changed the way manuals are written. It offers reusability and better adaptability than previous manual writing methods. Through its innovative principles, it has led to a new way of making manuals that prioritize flexibility and efficiency.

This approach is of value to Metso given the amount and variability of the processes used within the DMO organization. With this approach, it is possible to make changes on the “bricks” without having to change the whole document. If this process is well managed, every time an alteration is done to the instructions, the stakeholders will be made aware of said changes once they access again the main document. With this approach it is also possible to create separate sections based on relevance and context, making it easy to navigate and to obtain specific information at all stages of the process.

3.6 Operations manual effectiveness and benefits

A centralized operations manual offers many advantages, increasing both worker productivity and operational efficiency. In general, centralized document

repositories are developed and designed to manage documents efficiently in an organization (Dohinog 2022). At best, a clear and well managed repository aids with file management, sharing, and distribution. In addition, it plays an important role in the security of relevant documents.

Efficient file management, as explained by Dohinog (2022), creates shortcuts in workflow by allowing a quick access to documents. Such optimization removes the need for employees to spend valuable time and resources in laborious document retrieval. Standardized procedures, as explained by Gunasekaran (2000), are also important in improving operational efficiency. A centralized document defining all procedures and tasks serves as a critical tool for easy access to various tasks and processes. Furthermore, this standardization is crucial for minimizing errors.

Perhaps most importantly, the benefits of these documents can be seen in helping the onboarding process for new employees (Godfrey 2024). Having such resource not only ease the training process but also provide the new employee with all the relevant roles and responsibilities needed for daily tasks. It will also ease with maintaining uniform quality in the onboarding process. Furthermore, if employee turnover is high, the centralized documentation ensures that the organization keeps its capacity to function at all times.

In the past decades, manuals have started to transition to digital platforms. Digital solutions have some clear benefits in offering improved accessibility and ease of use. The advantages of utilizing digital documentation include also they easiness of compliance and adaptability. Therefore, selecting suitable digital solutions that are customized to meet the specific needs of an organization is important. This strategic choice can strengthen the organization's resilience and ability to adapt to changing circumstances. (Gale Business Insights 2018)

In conclusion, creating a centralized operations manual is crucial for improving productivity, operational efficiency, and organizational resilience. Implementing such practices promotes consistency and knowledge sharing. In addition, it provides the necessary tools for maintaining competence in the rapidly changing business landscape.

4 DATA COLLECTION, INTERVIEWS AND QUESTIONNAIRES RESULTS

The following section will provide the reader with information pertaining the elected methods to collect data, how they were devised, what was their aim and results obtained from said collection.

4.1 Data collection methods

In order to obtain insights from both management and from the operational personnel the author devised an interview and a questionnaire.

Referring first to the interview, the author was able to have it done with six members from the management or upper-level operational support teams representing all the three different regions. This would ensure that the answers provided contain qualitative insights from people with high-level visibility and understanding of the different team's needs, inner workings and also of their requirements for this kind of project. The author sent the invitation for these interviews via email where he described the purpose of the interview, requested permission to record the interview and also facilitated dates to schedule it.

The interview questions were designed based on the theory review done previously and it included most of the concepts and definitions in it. The interview aimed to obtain insights on the number of participants required for the project in all its different stages, how the information should be disseminated, how to request and announce changes in the manual, what is the expected timeline for the completion of the materials, what are the KPI's that will be affected by this project amongst other concepts. The interview also collects data pertaining to the interviewees tenure with Metso and asked for a description of their current functions.

The interviews took on average 30 minutes to complete and they were done in a period of one and half week, with all six chosen participants agreeing to participate in the interview with the pre-define conditions and target. The most relevant results and insights of the interview will be discussed in the following sections and the interview questions are available on appendix 1.

Pertaining now to the questionnaire, the author elected to create it according also to the literature review done previously, similarly to the interview targeting the experts. This questionnaire was shared with 37 persons on an operational level, and it obtained a response rate of 68% (total 25 persons completed the questionnaire). The author devised a questionnaire composed by 21 different questions aiming to obtain insights into the current state of the information sharing, the necessity of having instructions on the daily task, the wishes and needs of the operational staff. In addition, the author aimed to understand how this project is perceived to impact the operational day to day activities. The questionnaire took on average 10 minutes to complete and the author describes the results below in this section of the thesis. The full questionnaire questions can be found on Appendix 2.

4.2 Expert interviews results

At the start of the interview, the author started the discussions asking questions related to the participants' career trajectories within the company and their current job responsibilities. It was observed that participants, on average, possessed 14 years of experience at Metso, with almost all the participants having been involved with DMO since its inception in 2020. Their current roles within the organization are all in management or upper-level operational support.

During the interview, the author briefly introduced the theoretical framework previously reviewed, highlighting the importance of dividing the manual creation process into four distinct stages. It was mentioned also that companies undertaking such projects typically appoint a project manager and writer(s) to the project.

In reference to phase one of manual construction, all respondents agreed on the necessity of choosing a project manager and of selecting multiple writers for the project. Additionally, participants stressed the importance of selecting the writers based on their respective teams to ensure equal representation and consideration for diverse perspectives and requirements. When questioned about the ideal number of participants for the project, the majority supported the

selection of two members per regional team (North America and EMEA), and of an additional single member from the Indian team due to its smaller size. Some respondents also suggested choosing the writers according to specific processes based on their expertise. This would ensure optimal proficiency in handling the chosen tasks.

All participants in the interview demonstrated a clear understanding of whom to select for both project roles. Across the board the respondents emphasized that for the role of project manager, a manager or upper-level member of DMO should be chosen. They justified this choice by indicating that upper-level staff members possess greater visibility into team needs and are better equipped to prioritize and delegate tasks effectively. Regarding writer positions, there was a consensus to select team members with extensive knowledge of the processes. When asked about the ideal characteristics for the role of writer, respondents mentioned that those should be reliability, attention to detail, passion for the topic, and great knowledge of operational day-to-day activities.

The majority of participants, except one, identified several processes in need of clearer instructions. One participant even suggested a comprehensive rewrite of all processes for greater clarity and consistency. Furthermore, most of the participants, with one exception, reported that they are frequently approached by coworkers for support and clarifications on operational processes, with those requests occurring on a daily, weekly, or bi-weekly basis.

The interview then progressed to focus on phase two of the process, with participants agreeing that this task should be undertaken by both the writers and project managers while balancing their regular duties. The opinions regarding the time allocation for this undertaking varied significantly with some participants suggesting dedicating between 20% to 50% of total work time daily, while others advocated for a full day per week. Pertaining still to phase two, most participants estimated that this stage would require between six months to one year to complete. One participant expressed confidence that if the tasks and objectives are well-defined two to three months would suffice.

The interview then starts referring to the third phase of the manual creation process. The majority of participants recommended that two to three individuals per regional team should be selected for the pilot trial of the manual. However, opinions on the trial duration were very diverse, with some suggesting that the ideal timeframe would be a period of three to four weeks, and others favoured longer periods up to two months.

Participants recommended several methods to assess the usability of the manual. They proposed providing it to new members to gauge how quickly information can be retrieved and to identify any questions that arise regarding the presented processes. Additionally, participants suggested seeking direct feedback from users during the pilot stage, providing valuable insights for improving the manual. Related to KPI's the participants chose response time and consistency of outcome as the more likely KPI's to be affected by this new manual. Some also noted its importance in improving backlog healthiness and on-time delivery. None of the participants identified additional KPIs specifically related to the manual's influence on daily duties.

Following the discussion on phase three, the interview transitioned to questions related to the final stage, phase four. The participants suggested various methods for requesting changes to the manual in the event of updates or procedural adjustments. They proposed utilizing a change log request system, where users could formally submit requests for modifications to existing processes. Additionally, it was recommended that any manual modifications be directed either to management or directly to the writers/project manager. Participants also deliberated on the optimal number of individuals responsible for updating and maintaining the manual. Most of the participants agreed was that assigning one or two persons to this task would help prevent confusion and conflicting entries in the manual.

Once changes are implemented, all participants agreed that they should be announced during meetings and also via email, and that a change log should be maintained to keep users informed about the latest modifications. It was also suggested that changes be promptly reviewed to ensure alignment with the needs of different teams and operating methods. Related to how frequently the

manual should be revised, all participants mentioned that the manual should be modified according to necessity and once a year an overall manual review should be done to ensure that all instructions are according to standards and updates.

According to participants, the entire process, spanning from phase one to phase four, is estimated to take between six months to two years. They unanimously agreed that this project would significantly enhance the quality and consistency of outcomes for the targeted processes. Moreover, all participants emphasized the importance of this project for the company's future success. They highlighted the value of having well-defined and formatted instructions, foreseeing improvements in both worker and customer satisfaction as a result. Two participants expressed particular enthusiasm for the project, emphasizing their satisfaction with the support provided by the company. They affirmed their commitment to ensuring the successful completion of the project.

The main insights from the expert interview were that all the participants agreed on the need for this project, its importance, and on the benefits that the company will reap from completing it. For project manager, a senior member or someone from management should be chosen and the optimal number of writers was also quite consistently agreed as two per regional team and one from the India team. The participants all had someone in mind to nominate for this undertaking and the desired characteristics for the writers were also quite consistently agreed upon. Pertaining to the pilot stage, based on the answers, the time for this stage should be around three to five weeks. Two participants from each team should be selected for this trial and it was also suggested that the new manual should be given as onboarding material.

The necessity of having a change log, both for requesting changes and to keep a record of said changes was made clear and also, it was said that all the changes should also be announced by the management in the many frequently occurring team meetings. The total time for the completion of this project, according to the experts should be around one year and it was agreed that the manual should be revised on a yearly basis and also according to necessity.

4.3 Questionnaire results and insights

As this project targets the creation of an operational manual to be used on an operational day-to-day basis, the author devised a questionnaire that would be shared amongst the future users of said manual to obtain insights that will help shape the recommendation to the company.

The questionnaire was designed to obtain answers that confirm or deny the importance of this project to the company, to obtain insights from the operational specialist concerning the current status of the information dissemination system what are their wishes for the future manual and to also obtain insights on the preferences of the operational personal as to how this information should be presented in the future.

Initially, the questionnaire focused on collecting some demographic data, first pertaining to what age group they belong to, secondly pertaining to the duration of their ongoing tenure in the company, and lastly specific information about their current job functions (see Figure 2). The total number of participants in this survey was 25, and their age distributions was 8% in the 18-25 years range, 24% in the 25-30 years range, 24% on the 30-35 years range and the remaining 44% of the respondents were above 35 years old.

The participants came from a varied background with diverse working experience in Metso's DMO department. 16% have been with the company for 0-6 months, 12% for 6 months to 1 year, 20% for 1-2 years, and an equal 24% for both 2-3 years and over 3 years of working with Metso. This distribution gives access to opinions from a mixture of recently onboarded individuals alongside those with more extensive experience within the organization, providing the author with insights from diverse levels of experience.

The third question of the questionnaire aims to identify where, geographically the respondents are working from. 48% of participants work from Europe, making it the most represented geographical region, with 36% working from North America and only 16% of the participants work from Asia. These results line up

with the insights gained from the expert interviews, reinforcing the suggestion for the number of writers to be attributed based on team size.

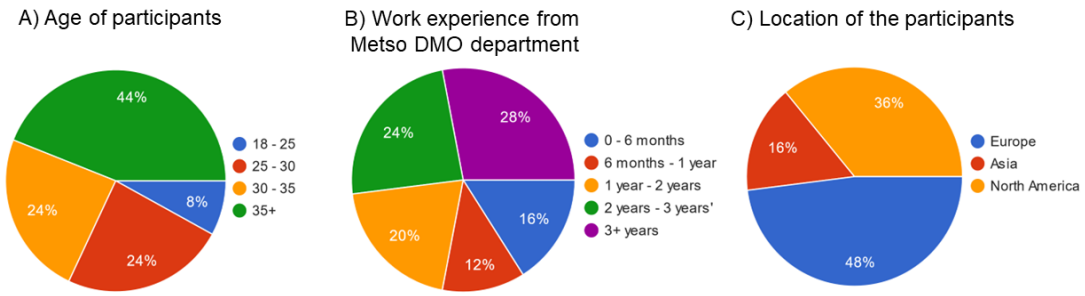

Figure 2. Demographic information of the questionnaire participants. A) Age distribution, B) work experience from Metso DMO and C) team location of the participant.

To conclude this first stage of the questionnaire the author questioned the participants if they handle both quotations and order management or not. Most of the participants handled both quotation and order management, representing 84% of all answers whereas only 16% handled only one of those functions. This gives the author the validation to include both processes in the manual, given that the vast majority of the respondents work on both functions, therefore the manual should include them both.

The questionnaire then pivots towards questions aiming to reinforce the importance of having a manual and how the current information is disseminated and perceived by the users. The participants were asked how frequently they used support documentation on their day-to-day activities. Only 4% of participants reported not using support documentation in their daily tasks whereas 96% reported using support material at least once a day. The support material was used on average 4 times per day amongst participants, highlighting their importance in every day operational processes.

The next question aimed to understand the reasons why the participants require the usage of support materials. The participants selected from the list of reasons available on the questionnaire why they require support or support documentation in their daily tasks. The most selected options were “too many tasks to memorize all” and “a lot of exceptions to consider”. 4% of the participants mentioned lack of training as the reason for their usage of support material and

10% mentioned that all the three reasons create their need. Other participants provided comments including “doing something that the worker has done only once or twice a long time ago”, “not memorizing specific codes or abbreviations”, “too many databases to go through”, “doing some processes only once a month”, “it’s hard to memorize those” and “lack of access or granted permissions. These answers reinforce the need of having the manual and to have it in a centralized manner where all the information can be obtained from one document.

Regarding the accessibility of information required for daily tasks, participant responses varied widely across the Likert scale (see Figure 3). While some respondents found it relatively effortless to locate all necessary information, a significant majority, comprising 64% of participants, expressed that accessing this information was more challenging than straightforward. Specifically, their responses exceeded a rating of 5 on the Likert scale, indicating a perception of difficulty in retrieving the required information.

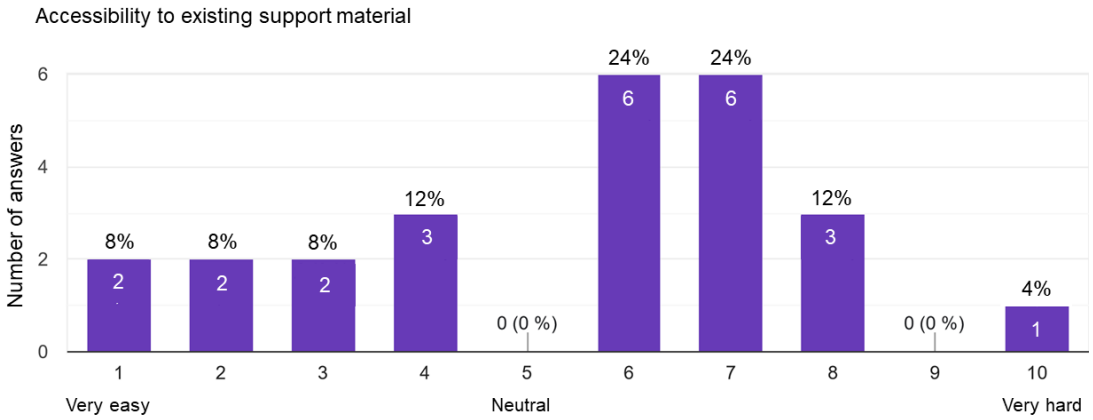

Figure 3. Accessibility of existing support materials according to questionnaire answers.

The participants were then asked which avenues they use when in need of clarification or support pertaining procedural information. The provided options were the following: shared repositories such SharePoint, Notebook and Teams files; asking from a colleague or using previously collected information personally. Last option included all the above-mentioned methods. 92% of participants use all the listed methods to find information in case of needing clarification. This answer confirms the diversity of sources and avenues currently existing in

the company to obtain information, making it more time consuming to retrieve it, versus, having it all in one centralized document accessible to all.

Pertaining the quality of the information currently available, more precisely regarding its extensiveness and how detailed it is, the majority of the participants (52%) found the resources to be somewhat incomplete or had a neutral opinion, with 36% percent finding the information to be incomplete to some degree. The remaining participants found the information to be somewhat complete with 8% finding the information to be very complete. With these results, the author perceives that the information available is somewhat incomplete and in need of revising to provide the users with the full information needed in all the processes.

The answers given about the consistency of presentation of the manuals and repositories varied the most. The majority of participants (28%) rated the consistency of manual presentation as 7 or 8 in the Likert scale, indicating a moderate to high level of agreement with the material being consistent. Additionally, 24% of respondents rated it as 3, indicating some disagreement, while only 4% rated it as 1, indicating strong disagreement. Overall, the distribution of responses suggests a mixed perception regarding the consistency of manual presentation. However, it is worth noting that none of the participants answered 10 which would implicate total consistency of materials. This suggests to the author that the existing instructions already have a somewhat consistent format and that it is likely that only some processes deviate from that format.

When referring to the maintenance of the instructions, more specifically if the manuals are updated in a timely manner, only 12% of the participants mentioned that the materials are not updated regularly with a total of 60% percent of the participants answering that documents are somewhat not frequently updated or had a neutral opinion. None of the participants answered that the materials were fully updated and only 40% of the participants answered that the materials are somewhat frequently updated. This indicates to the author that improvements should be made pertaining to this aspect of the manual and that better systems should be put in place to ensure that the materials are always updated in a timely manner.

Pertaining to the existence of conflicting or confusing information within the current instructions, 68% of the participants answered that they find frequently such issues in the information with 16% of the participants placing their answers high on the Likert scale reflecting that they find often conflicting or confusing information. Only 32% of the participants had a neutral opinion or had mentioned that they don't frequently find conflicting information. It is important to note that none of the participants answered "not at all" indicating to the author that to some degree the information provided is somewhat confusing and/or contains conflicting information (see Figure 4).

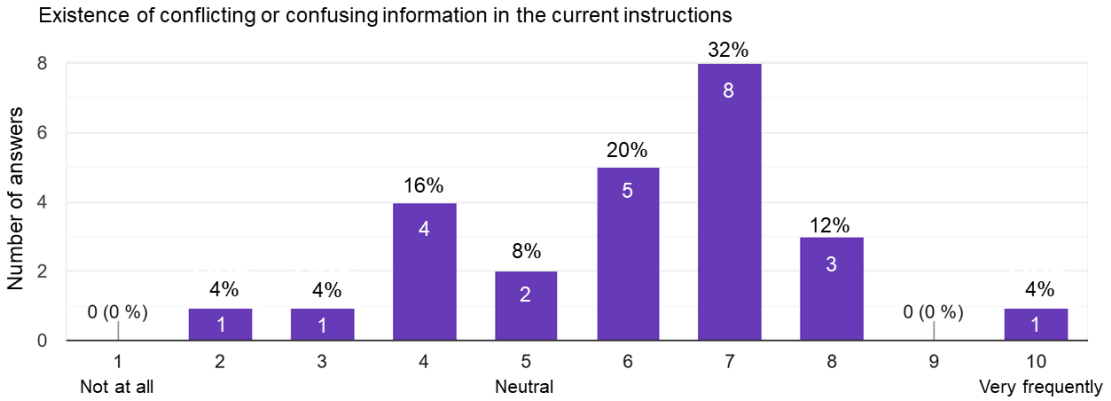

Figure 4. The existence of conflicting information or confusions in the current instructions.

Concerning finding the information pertaining the correct person to ask for support in case of need, only 8% answered yes and 92% answered no or in some cases. This indicates that the instructions should be revised to ensure that all the instructions have this information available to the users. Following this, when asked about if the support materials inform you on the hierarchical structure in the team, none of the participants had a clear yes answer, but 28% answered no and 72% answered in some cases. Once again, this insight suggests to the author that a revision is in order and that this information must be made available in all the instructions.

Throughout the participants there was a clear consensus that the current system of information gathering/dissemination needs to be improved with 72% of the participants answering with "yes" and the remaining 28% answering "in

some cases". This indicates to the author very clearly that the current system requires improvement (see Figure 5A).

When asked if the participants would benefit from having a centralized document with all instructions available 92% of participants think that they would benefit from a centralized document with all the processes used in daily tasks. These answers clearly reflect the need for having said centralized document (see Figure 5B).

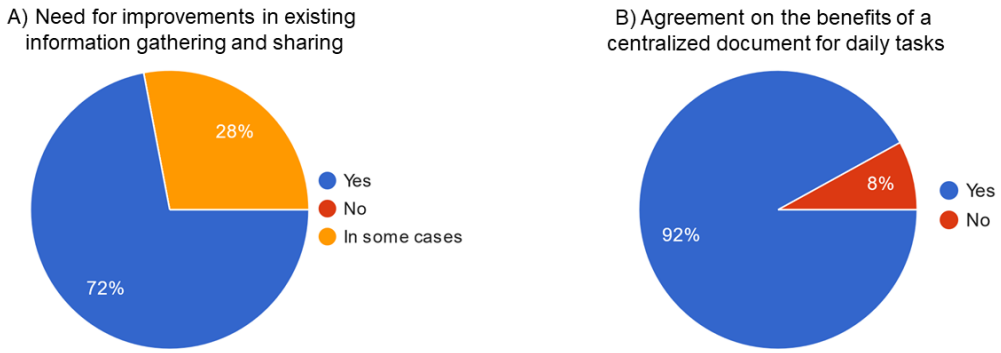

Figure 5. Need and benefits for improved information dissemination. A) Need for improvements in current information gathering and B) participants agreeing on the benefits of a centralized document including all daily processes.

A wide variety of processes were indicated when the participants were asked if they could name specific processes that are lacking in instructions or are incomplete. The answers are quite varied, and it reflects to the author that several different processes need improving on their current instructions and that different users have different opinions concerning the processes that need improving. This further validates the need for a standardized method of creating said instructions.

Participants opinion about who should be responsible for the collection and organization of materials was also asked. Most answers reflected that the participants would like the management to be involved in the process to ensure consistency. In addition, persons with more knowledge and that use these processes daily should be responsible for creating/reviewing the information. These answers correspond to the insights gained from the expert interviews where similar answers were obtained.

When asked if an improved method of information sharing would increase their working autonomy and quality of outcomes, the answers were unified. Only 4% of participants did not see benefits in their daily tasks whereas 96% had an answer between 6-10 in the Likert chart, strongly agreeing with the statement and further reinforcing the need for this project to be considered (see Figure 6).

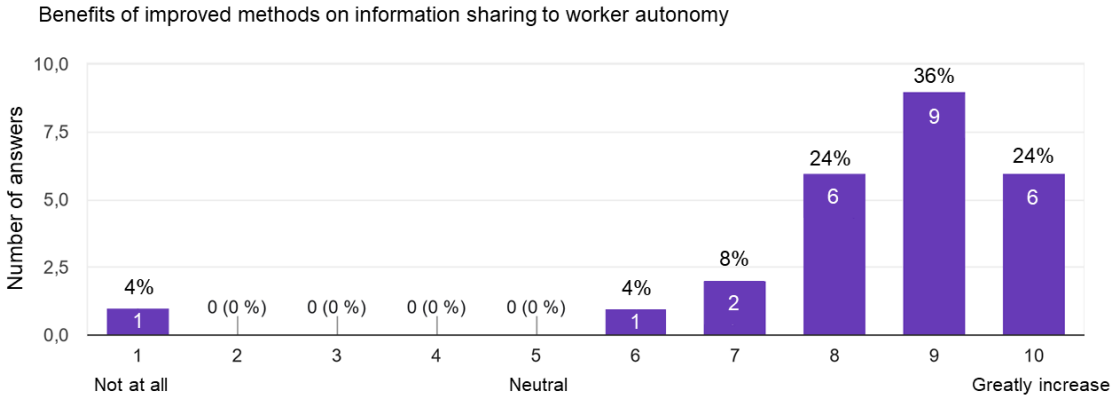

Figure 6. Participants view on benefits of improved methods on information sharing to worker autonomy and quality of outcome.

The participants were also asked about their preferred platform to have all the necessary information available and 84% responded that they would prefer to have a frequently updated file available on Microsoft SharePoint. This indicates that the operational staff has a strong preference for this platform. Lastly, when asked if the manual should include information pertaining to all the regions in one single document or if different documents should be done for each region, 72% of the participants answered that they would prefer to have a different document per each region.

This questionnaire reinforced the importance of having a centralized manual with all the information necessary available in a consistent manner. Most of the participants agreed that the current system requires improvement and that they would benefit from having said centralized manual. It was also made clear that there should be a different document for the different teams in order to ensure compatibility with the specific methods and exceptions that the different teams might have.

5 RECOMMENDATIONS

Based on the theory review and insights gained from both interviews and questionnaire responses, the following are recommendations for creating and maintaining a centralized repository for procedural information related to DMO's QOM teams at Metso. The recommendations are divided into different stages of the process to clearly identify the necessary steps at each point of the manual creation process.

5.1 Initial planning, target setting and resource allocation

First, the project should be divided into four stages, as mentioned in the literature review. This will provide a clear framework for completing the manual construction and with this structured approach facilitate timeline creation, task delegation, and ongoing project status communication will be facilitated. To help with project management, a Gantt chart should be created for the whole process. Each phase of the project should be divided into several tasks and the chart should clearly state both the task and the timeline for its completion.

Metso should begin by appointing a project manager from a managerial or high-level position. This ensures consideration of all team needs and optimal resource allocation for the whole process. Writer selection is also crucial in this initial stage. Metso should choose two members from both the EMEA and North American teams and one member from the India team to provide diverse perspectives. Writers should be knowledgeable, interested, reliable, and detail-oriented, with a high-level understanding of the QOM daily processes. They should also be high-performing team members.

Weekly time allocation for project members should also be outlined at the outset of this project. The author recommends dedicating 20% of weekly work time to the initial project stages based on the insights obtained in the interviews with upper-level personnel. A clear list of all the processes to be targeted by this project should also be created and agreed upon before the writing stage. This will provide the project manager and writers with an overview of the whole project and assist in time and resource management.

The format of the manual itself should also be decided prior to the writing stage. The author's suggestion is to create a PDF document with all the processes listed with corresponding hyperlinks leading the reader to the desired instruction sets. This will make the document easy to access and will make it also easier to apply the LEGO methodology, allowing for changes to be made on individual instructions without the need to change the whole document.

The company should also decide on a clear format for the instructions to be presented and have it followed consistently on all the instructions sets. This would require that the existing complete instructions would be re-done according to desired specifications and the newly created ones to be in accordance. Having every instruction in the document consistently presented will allow for faster retrieval of information and navigation from the operational personal. The company must also decide how is the manual going to be disseminated at this stage. Based on the answers collected in the questionnaire the author suggest that once completed, the manual should be shared via MS SharePoint.

The timeline for the project should also be clearly defined in this stage. The ideal timeline for the whole project completion should be between one and one and a half years due to the scope and size of this project. All different four stages of this process should be well defined and resource allocation planned accordingly. For the planning stage (phase one), the author suggests the allocation of five to eight months. The writing and refining stages (phase 2) should take between six to nine months and lastly, the pilot stage (phase 3) should take no more than 5 weeks to complete. The continuous maintenance and reviewing of the manual (phase 4) are never-ending endeavours that should be done based on necessity and also at least on a yearly basis.

Lastly pertaining the planning stage of the project, based on the responses collected in the questionnaire, the author suggests that each regional team would have their own individual manual and that the company plans the construction of the manual with that considered. Some of the instructions can and should be shared, but the final details should be then refined to match the specifications of each region. The desire for regional manuals was clearly expressed by the par-

ticipants and the author reinforces the necessity for such requirements given the many operational differences and compliance factors that are unique to each region.

5.2 Creating the manual

Once all the processes are chosen and the tasks attributed to the selected members, the construction stage of the manual begins. Based on the previous recommendations, Metso should begin reviewing the current instructions sets and creating the new ones to be placed on the manual based on the previously agreed upon format. The author also suggests the creation of a page containing a list of all teams, it's members and their responsibilities. This page should be easily accessed in the manual in order to facilitate escalations and also to provide the reader with an overview of the teams and their respective roles and responsibilities.

A change log page should be also included, so that in the future, the users can see all the processes that have being changed and when the changes happened. This will ensure that all the users are up to date will the latest instructions sets. In order to share this document under construction, the author recommends the file to be placed on Microsoft's SharePoint and to grant access to relevant members at this stage. It is important to note again that only the PDF should be shared to avoid unintended changes in the manual from non-authorized personnel.

5.3 Trial phase

Pertaining to the trial period of this project, the author recommends the selection of one senior member of each team, and one recently onboarded member. This will ensure compliance with the existing methodology, operational efficiency and provide also a non-biased view of the instructions sets from the less experience members. With this the company will gage how the information supports all diversity of employees with all the diverse skill levels.

The selected members would methodically collect their feedback and suggestions and the author suggests that a weekly meeting with the writers and project manager should be set in order to discuss the feedback and plan the implementation of possible improvements. The trial period should last no longer than 5 weeks and once completed the manual should then be shared with all the stakeholders via the previously discussed platforms.

5.4 Changes and reviews to the manual, timeline for the project and monitoring efficiency

To request changes in the manual, a clear communication method should be established. The author suggests the creation of a separate file, where all team members can request such changes. These requests would be placed in a change request log that is visible to all the authorized writers of the manual. These changes would be reviewed by the relevant personnel and before being implemented, the writers should confirm with management their compatibility and compliance. It is also recommended to create a pre-defined template for these requests to facilitate the process on both ends.

Once changes are done in an instruction set, those changes should be inserted on the change log page of the manual. Additionally, the author recommends for the management to announce those changes in one of the many meetings held with the teams and also to send an email to all the relevant parties. This will ensure that everyone is aware of said changes and promote discussion of the new instructions when needed.

The manual should be reviewed based on necessity and also annually, by select members from all teams to ensure compliance with the latest procedures. The annual review of the manual should be done in order to ensure that all the instructions remain in accordance with the desired specifications and also to guarantee that no changes were done without being properly announced.

In order to monitor the effectiveness of the manual, the author suggests that the management monitors the previously mentioned KPI’s and compare it to the previous results prior to the manual implementation. This monitoring should be

more frequent in the first months of the manual being deployed, to provide management with a clear notion on the effectiveness of the manual and allow for changes before the users get familiar with it. If the manual is effective, response time, consistency of outcomes and on-time delivery should suffer the most obvious impact and it will provide a clear indication on the success of the manual.

5.5 Closing thoughts

In conclusion, the recommendations provided Metso with a clear pathway to create a centralized manual for all the processes within DMO's QOM team. By analysing and reviewing the insights gained from the literature review the author provided a structured plan for the process with all stages, timelines, team compositions, manual format and sharing mechanisms considered and described.

The author's recommendations place emphasis on detailed and clear documentation, consistent format for the instructions and transparent communication channels between the participants developing the project. It also includes the detailed recommendation for a trial period, feedback mechanisms and for continuous evaluation to ensure user-centricity and continuous improvement.

By following these recommendations, Metso will be able to create a manual that is easily adaptable, that will improve operational efficiency and facilitate the sharing of knowledge. Continuous monitoring of KPI's will also provide Metso with clear path to evaluate the manual's effectiveness and it will inform the company of possible refinements to be done.

6 CONCLUSION

6.1 Reliability and validity of the study

It was important to the author to guarantee that the data gathered and analysed was consistent, valid, and provided reliable grounds for the study and its final recommendations. The importance of ensuring that the research was in-line with the relevant concepts of this thesis was also considered by the author. For this the author placed special attention to the design and implementation of the research measures and data collecting tools applied in this thesis.

The validity of the content of this thesis was assured by a comprehensive review of the relevant literature which was used by the author when developing the questionnaire and the interview targeting the specialists. The data was collected using standardized procedures including qualitative interviews and a quantitative survey. This ensures consistency across participants and of the collected data.

The alignment between the findings obtained with the questionnaire and interviews with the literature review, further reinforces the validity of the results and provides confidence in the validity of the research methods and tools chosen for this thesis and also to the recommendations provided. By addressing the considerations pertaining to validity and reliability of this study the author strengthens the recommendations provided for Metso's project.

6.2 Limitations and further study recommendations

This study's limitations are mostly surrounding the lack of participants from the upper management and also surrounding the limited number of answers obtained from the questionnaire. The author would have been able to provide more accurate insights and a more accurate recommendation if the sample size would've been bigger. Another limitation this study had was related to the inconsistency of some answers provided by the workforce, forcing the author to focus on the average values of some answers, with that losing overall precision.

For future studies, the author recommends further investigation into optimal template creation methods for information collection, as well as exploring different data-sharing software options to enhance data collection and dissemination. Additionally, the author suggests exploring the benefits of integrating knowledge managers within the company to support ongoing information management needs.

6.3 Conclusion

At the beginning of this thesis the author identified the commissioner and the research question targeted. The relevance of this research question was explained, and the author provided a description of the current state of information dissemination and detailed the current flaws in it. The plan for conducting the thesis, including project scope and data gathering methods were also detailed in this thesis.

In the literature review, relevant concepts were explained, and an overview of tools used by Metso's QOM personnel was provided. QOM tasks and functions within Metso's DMO were described. Clear guidelines for creating a centralized repository were identified, suggesting a four-stage process with appointed project managers and writers. The benefits of a LEGO approach were explored, emphasizing its flexibility for making instructional.

Qualitative and quantitative surveys were conducted with Metso's workforce, including interviews with upper-level DMO workers and questionnaires for specialists. These surveys provided valuable insights into how the company perceived this project, provided also justified guidelines for its execution, and elaborated on the participant preferences for the manual dissemination, evaluation, and updating.

By combining the theoretical insights with the survey findings, the author then presented a justified recommendation for Metso's centralized manual building project, that will encompass all the DMO QOM's operational processes and will take into consideration all the insights gained with the qualitative and quantitative data gathered.

In conclusion, the author's research provide evidence for the necessity of a centralized manual and provides evidence-based recommendations for its planning and implementation. These suggestions will provide significant improvements in KPIs such as response time, consistency, and quality of outcomes, thereby enhancing workforce autonomy and efficiency.

With the creation of a new manual following the above proposed recommendations Metso will not only increase worker autonomy and satisfaction but it will also guarantee that knowledge stays “in house” for future members. This will in turn ensure compliance by all team members and in turn, promote greater customer satisfaction by having consistent and accurate processes supporting the operational processes.

REFERENCES

Buzzell, Robert D., & Gale, Bradley. (1987). “The PIMS Principles: Linking Strategy to Performance”. The Free Press.

Cambridge Dictionary. (n.d.). “Operations Manual”. Retrieved March 14, 2024, from https://dictionary.cambridge.org/dictionary/english/operations-manual

Dohinog, Dutchy A. (2022). “Centralized Documents Repository”. Globus An International Journal of Management and IT, 13(2), 12–14.

Gale Business Insights. (2018). “Operations Manuals: Prioritization Meets Digitization”. Ground Support Worldwide. Retrieved April 9, 2024, from https://link-gal-com.libproxy.tuni.fi/apps/doc/A558602478/GBIB?u=tampere&sid=bookmark-GBIB&xid=5a5a3111

Gappa, Robert. (2007). “Creating an effective operations manual: A "how-to" guide”. Franchising World, 39(3), 91-95.

Godfrey, Sarah. (2024). “Unlocking Efficiency: The Crucial Role of Procedure Manuals in Business Operations”. Retrieved April 9, 2024, from https://www.driveculture.co.nz/blog/blog-post-unlocking-a-stress-free-workplace-x9hg7

Gunasekaran, A., Forker, L., & Kobu, B. (2000). ”Improving operations performance in a small company: A case study”. International Journal of Operations & Production Management, 20(3), 316-336.

Günsari, Tüzin Akçinar, Aysegül Kaya, & Yeliz Ekinci. (2022). “Forecasting Preliminary Order Cost to Increase Order Management Performance: A Case Study in the Apparel Industry”. International Journal of Business Analytics, 9(5), 1–15.

Hall, Earl., & Johnson, Juliane. (2003). “Integrated project management”. 1st edition, Prentice Hall.

Hatala, John-Paul., & Lutta, Joseph George. (2009). “Managing information sharing within an organizational setting: A social network perspective”. Perf. Improvement Qrtly, 21, 5-33.

Heery, Edmund., Noon, Mike., & Heery, Edmund. (2008). “A Dictionary of Human Resource Management (2nd revised edition)”. Oxford University Press.

Jaiswal, Eshan. (2012) “A case study on quality function deployment (QFD)”. *Journal of Mechanical and Civil Engineering*, *3*(6), 27-35.

Kokoris, George. (2018). “What is an OMS and Why Do I Need One?”. Supply Chain 24/7. Retrieved April 10, 2024 from https://www.supplychain247.com/article/what_is_an_oms_and_why_do_i_need_one

Larson, Kathy. (2008, October). Taking the “Manual” Out of Operations and Training Manuals. Franchising World, 40(10), 31-33.

Leung, KH., Luk, CH., Choy, KL., Lam, HY., & Lee, Carman KM. (2019). A B2B flexible pricing decision support system for managing the request for quotation process under e-commerce business environment. International Journal of Production Research, 57(20), 6528-6551.

MacNicoll, Tracy. (2011). How to Write an Operations Manual. Edward Lowe Foundation. Retrieved March 11, 2024, from https://edwardlowe.org/how-to-write-an-operations-manual-2/

Metso:Outotec: Business Overview. (2022). Retrieved March 9, 2024, from https://www.metso.com/corporate/investors/annual-report/

Pyzdek, Thomas., & Keller, Paul. (2012). The Handbook for Quality Management: A Complete Guide to Operational Excellence (2nd ed). McGraw Hill.

Taylor, J., Bradley, S., & Nguyen, A. N. (2003). Job Autonomy and Job Satisfaction: New Evidence. IDEAS Working Paper Series from RePEc.

APPENDICES

Appendix 1. Interview for Management and upper-level distribution Support.

This document will contain questions for an interview to be conducted in the context of a bachelor's thesis commissioned by Metso. The research question that the thesis aims to answer is *"How to create and maintain a centralized repository for all the procedural information related to DMO's Quotation and Order Management teams?" W*ith that in mind the following is a list of questions tailored to obtain insights from key members and managers of the teams that this thesis will target.

Questions:
Q1- How long have you worked in Metso?
Q2- How long have you worked in DMO?
Q3- Please describe your current role within the organization:

As you know this thesis aims to optimize the creation of an operations manual for the quotation and order management processes within DMO. With that in mind I would like to preface the following questions by mentioning that according to the literature review, this manual should be done in 4 different phases:

1- Evaluation and Planning – Review, Identify, Outline and attribute assignments.
2- Drafting and Refinement – Editing, Project Management and Refinement
3- Implementation and Testing – Practical application, Feedback and evaluation
4- Maintenance and Updates – Regular Updates, Revisions and Continuous improvements

Referring first to phase 1 of the construction of the manual. According to the literature, these kinds of endeavours benefit from having a project manager and a writer(s) for the manual. In some cases, project manager and the writer can be the same person.

Q4- How do you see this being developed in Metso? Do you think both roles will be selected?
Q4.1- How many persons do you think should be allocated to this project?
Q5- Do you already have someone in mind for these rolls?
Q5.1- What kind of employee characteristics do you think would be ideal for these rolls?
Q6- Have you identified processes in need of better instructions/documentation?
Q7- How frequently you are asked for support from your co-workers for procedural information?
Q8- Do you think the person(s) responsible for this project will be solely responsible for this task or is this something to do while maintaining their normal tasks?
Q9- If they must keep their normal duties, how much time a day do you think should be allocated to this project?

Once all the selection processes are complete phase 2 begins.

Q10- How long do you think this phase 2 will take?

On the third stage of the project, it is suggested to run a trial with selected members, to evaluate the quality of the material and to improve on any issues found.

Q11- How many persons do you think should be selected for this pilot?
Q12- How long do you think this pilot should take?
Q13- Do you have any suggestion on how to evaluate the manual and its usability?
for the pilot the idea would be to give to new team members if they find the handbook useful.

Lastly, referring to phase 4 the maintenance and systematic review of the manual.

Q14- How often do you think the manual should be analysed?

Q15- Considering the following KPI’s, please identify the most important in this context:

- Backlog Healthiness
- Consistency of outcomes
- Response time
- On time delivery

Q16- Are there any KPI’s not mentioned that you think are important in this context?

Q17- Do you have any suggestion on how to announce procedural changes to be added to the manual, meaning how to suggest changes to existing instructions?

Q18- Should one or more persons be responsible for the continuous maintenance of the manual?

Q19- In your opinion, how should the changes and updates be announced to all the stakeholders to be made aware of them?

Q20- From beginning to end, meaning until phase four, how long would you estimate that this whole project would take?

Q21- Do you think that this project if taken to completion will increase the quality of outcome for the processes and operations it targets?

Q22- Do you think this project will be of importance to the company and its future? Any comments on the necessity of this project?

Appendix 2. Questionnaire for the operational staff of DMO

Questionnaire concerning the availability/quality of instructions related to daily operational processes within Metso DMO.

The following document is a questionnaire to be sent to members of DMO more specifically to the order management and quotation specialists and also distribution support.

The purpose of this questionnaire is to aid the realization of a bachelor's thesis targeting the creation of a centralized operations manual for Metso's operational processes related to quotation and order management.

The literature review done indicates that this manual should be done in four different stages:

1- Evaluation and Planning – Review, Identify, Outline and Assignments
2- Drafting and Refinement – Editing, Project Management and Refinement
3- Implementation and Testing – Practical application, Feedback and evaluation
4- Maintenance and Updates – Regular Updates, Revisions and Continuous improvements

The end result of the thesis will be a recommendation on how Metso should store, disseminate, and maintain the operations manual in an optimal way.

Your answers to this survey will be anonymous and they will serve to better define stage one, meaning, this survey will help the thesis author to better identify the problems with the current instructions and how they are disseminated. This questionnaire also aims to better outline the scope of the manual and how should the manual creation be done.

This survey will take approximately 10 minutes to complete and if you have any questions or extra comments, please do not hesitate to contact me at Miguel.duarteribeiro@tuni.fi.

Q1 – How old are you?

- 18-25
- 25-30
- 30-35
- 35+

Q2 - How long have you worked for Metso in DMO?

- 0 – 6 months
- 6 months – 1 year
- 1 year – 2 years
- 2 years – 3 years
- 3+ years

Q3 - In what region are you located? Where do you work from?

- Europe
- Asia
- North America

Q4- Do you handle both quotations and order management?

- Yes
- No

Q5- How many times a day on average do you require the use of support documentation in your daily tasks?

- Please provide your answered on a Likert scale from 0 to 10.

Q6- Why do you require support or support documentation in your daily tasks? (Choose one or more options)

- Lack of training
- Too many processes to memorize all
- A lot of exceptions to consider
- All of the above
- Other (please specify bellow on optional question 6A)

Q6.A – Please elaborate.

- Open answer

Q7 - Do you find it easy or hard to find/obtain said information/support?

- Please provide your answered on a Likert scale from 1 to 10, where 1 is very easy and 10 is very hard.

Q8 - What avenues you use when in need of clarification/support pertaining procedural information? (choose one or more options)

- Search online repositories / manuals (SharePoint, Notebook, Teams files)
- Ask a colleague(s)
- Use previously collected information personally
- All of the above

Q9 - Do you find that the support information available online is usually complete with all the necessary details?

- Please provide your answered on a Likert scale from 1 to 10, where 1 is very incomplete and 10 is totally complete.

Q10 - Are the manuals / repositories available online presented in a consistent manner? With the same format and layout

- Please provide your answered on a Likert scale from 1 to 10, where 1 is very inconsistent and 10 is completely consistent.

Q11 - Are the manuals/repositories updated in a timely manner?

- Please provide your answered on a Likert scale from 1 to 10, where 1 is not regularly updated and 10 is very frequently updated.

Q12 - Do you often find conflicting or confusing information in the available resources?

- Please provide your answered on a Likert scale from 1 to 10, where 1 is not at all and 10 very often.

Q13 - Can you, in the manuals, identify the correct person to ask for support in case of need?

- Yes
- No
- In some cases

Q14 - Do the support materials inform you of the hierarchical structure in the team in the case you need to escalate certain situations?

- Yes
- No
- In some cases

Q15 - Do you think that the current system of information gathering / sharing requires improving?

- Yes
- No
- In some cases

Q16 - Do you think you would benefit from a centralized document/manual with all the instructions related to all processes used in your tasks?

- Yes
- No

Q17 - Can you name specific processes that are lacking documentation or have insufficient instructions?

- Open answer.

Q18 - Who do you think should be responsible for the collection of the materials and organization of the manual?

- Open answer.

Q19 - Do you think that an improved method of information sharing would increase your working autonomy and quality of outcome?

- Please provide your answered on a Likert scale from 1 to 10, where 1 is not at all and 10 is greatly increase.

Q20 - If you could choose, what platform you would recommend to have all the necessary information available to you?

- MS Notebook with well defined sections
- Frequently updated file shared in MS Teams files
- Frequently update file shared in MS SharePoint
- Other (please provide additional comments in the next optional question)

Q20.A - What would be your preferred platform for the manual sharing?

- Open answer

Q21 - Do you think the manual should encompass all regions or should it be region specific?

- All the regions should be included in one document
- There should be one document per region

Thank you for your time and attention to this matter, your responses are greatly appreciated, and it will support the author in presenting the company with a recommendation based on the insights gained from your participation.