Deep Science Publishing
https://doi.org/10.70593/978-81-989050-0-0_4

DeepScience
Open Access Books

Chapter 4: Enhancing organizational efficiency through cross-functional workflow integration

4.1. Introduction

Information systems have undergone significant transformations over the past thirty years, affecting the ways organizations develop their information technology capabilities. For organizations, enhancing the value of IT from a simple dependency to a competitive advantage requires the integration of cross-application workflows that involve multiple functional areas. Such interdependencies demand a seamless alignment of the organization structure and information communication technology to achieve chosen strategic objectives. Organizational flexibility is particularly important in the current era, where competition and environmental changes are accelerating. However, this requires interdependent functions to go beyond bureaucratic organizational structures able to adapt to hastily set strategies, because such organizations may not be able to seize timely the competitive advantage that a strategic capability may provide through the design and implementation of the appropriate policies and decision-making models (Goyal, 2021; Ahmad et al., 2023; Attah et al., 2024).

Focusing on interdependencies, this paper proposes a new perspective for the design of information systems across functions based on the concept of organizational efficiency. Organizational efficiency consists of the harmonization of vertical and horizontal dimensions of the implementation of an activity, in trying to create value for the organization without being wasteful of resources, and simultaneously from the perspective of each single functional area involved in the activity and from the perspective of the organization as a whole. That is, different types of information systems support different implementation workflows; for each function involved in the activity, the functional information system supports the functional part of the implementation, which seems to be the most convenient and the least expensive in terms of costs and times; for the disjoint modular areas of the implementation, the organizational loops have been defined to align the functional parts with high value-added duration and the functional systems used to support them (Mokkapati & Goel, 2024; Şişu et al., 2024).

4.1.1. Overview of the Research Context and Objectives

More than was possible in the past, organizations today seek to meet the demands of customers and consumers. Growth in customer expectations and fierce global competition, reinforced by the desire to reduce operational costs and offer improved quality products and services at lower prices, have helped to fuel a deeper interest in organizational efficiency and performance.

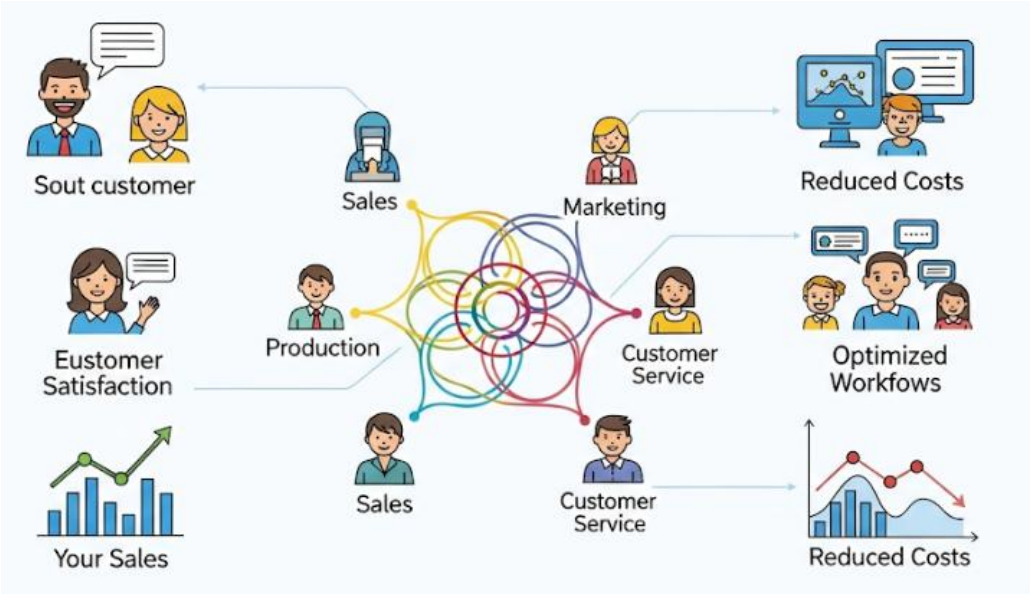

Fig 4 . 1 : The Integrated Enterprise

To be successful, an organization must constantly be aware of the overall effect of its objectives, operations, and strategies on customer satisfaction and the organization's capability to meet such needs. One of the key challenges organizations face is harmonizing all internal and external interactions so that they form an integrated chain. When an action occurs that is not part of the organizational goals or that causes significant disruptions or delays for other activities and processes, we are dealing with a lack of integration. Some of the keystrokes to overcome this lack of integration occur through: promoting integrative skills and competencies of all employees without putting them at risk of burn-out or overload; creating processes such as cross-functional teams where the members learn how to work for a common good; and reinforcing the vision and mission of the organization, so that their collaborative efforts do not turn into an adversarial competition. However, how many organizations are ready to face these challenges? Today's companies are not always as well prepared as required in order to supply the necessary human resources to put these activities into practice. The reciprocal dependency among activities is as much responsible for the difficulty in predicting and controlling timeframes and costs of work outputs, as it is for the delays and additional

costs that often result from an inadequate interface among different responsible functions. The very integration of function terms that have grown in prominence lately is a clear recognition of the significance of such links.

4.2. Understanding Organizational Efficiency

1. Definition and Importance

Organizational Efficiency is frequently summed up as "doing more with less," suggesting that if an organization uses fewer resources to produce the same output or uses the same resources to create more output, that organization is more efficient. The various costs associated with goods and services have varied through the years, shifting the focus of the organization and requiring changes in thinking about what efficiency means. The reason for seeking efficiency is to allow more return from investments in the organization or increase the capital available for reinvestment within the organization. Reducing production costs may only have the limited effect of extending the profit margin for the amount of time it takes for the market to react to the price reduction associated with overcapacity. Nevertheless, efficiency is an important measurement for any organization and is critical to success in a competitive market.

The value of any goods and services produced hinges on demand from both the marketplace and the customers to the organization. One supplier's strategy may be to hold unique supplier status, allowing maximum returns on goods and services when demand is high, while another strategy is to produce at very low costs and, thus prices, to attract customers by providing the best value – low costs for equivalent or superior goods and services. Of course, most suppliers' strategy rests somewhere between those two extremes. There are truths embedded in both the ideas of "more for less" and "more for more." Organizations also have constraints placed on them by the environment, government, and many other influences, which may force them to concentrate on efficiency over effectiveness, or vice-versa.

2. Key Performance Indicators

Performance measures such as productivity and profitability and ratios such as the money multiplier or activity ratio – total sales divided by total assets – and return on investment (ROI) – net income divided by total assets – have often been used to measure efficiency. In both of these ratio examples, the numbers used in the calculations come directly from traditional financial statements. Activity ratios for specific events that drive company performance may also be very useful.

In many ways, financial statements tell the story of organizational performance through financial assessments or summaries. Accrual accounting is primarily concerned with

matching income and expenses to calculate net income. The balance sheet also serves as an important assessment of accumulated company performance. Various other calculations, such as the P/E ratio, attempt to link the information from the financial statements to assess the investment potential of a company. Trading volume and P/E ratios are also used by individual investors, investment firms, and brokers to assess current investment preferences and trends and the likelihood of changes in trends.

4.2.1. Definition and Importance

Organizational efficiency is ideally described as the business output per unit of resource-used input and is important because it drives a business's profit margins, sustainability, and overall success. Think of it as a math equation: Efficiency = Output(Resources)/Input. The operational difficulties an organization faces, coupled with evolving customer expectations for quality, price, speed, and convenience as well as growing competition from low-cost suppliers have forced organizations to rethink the traditional logic that holds that functional specialization, separation, and hierarchy are the best means of achieving enhanced efficiency, productivity, effectiveness, and customer satisfaction. These developments have led many organizations to adopt a greater degree of cross-functional integration and coordination within some of their critical operating processes or workflows as a means of reducing costs and cycle times while improving the quality of service.

An organization's efficiency is defined primarily by how well it utilizes its workforce's knowledge, skills, and experience, and its information technology, facilities, and equipment. The specific areas of a business's operations that affect efficiency vary from industry to industry, and organization to organization. In general, however, those functional areas that possess the greatest impact on a business's success are those concerned with product/service definition, research and development, materials and inventory management, production, marketing and sales, credit and collections, human resources management, and capital. Thus, efficiency is universal regardless of the specific activities that comprise a business's operations, or even the industries to which it belongs.

4.2.2. Key Performance Indicators

Some key performance indicators (KPIs) are efficiency, quality, or yield – and these sometimes have sub-indicators. These parameters tell us how timely and how correctly the task or job is executed. Everybody working in a specific area over a certain time has to be aware of Leanness, Zero Harm, Quality, and/or its sub-indicators. Parameters like safety complete to what extent the sites perform in a riskless manner.

If we only looked at direct productivity we would easily detect non-lean performance. If we look at direct plus indirect productivity we would judge areas with a chain of indirect support functions relative to their informatics or non-revenue-generating overhead. The IT-run area has to ensure that indirectly support units to achieve similar overall contribution and available resource numbers by submitting appropriate KPIs that help with the identification of problem areas. The right number provides an ideal sense of Leanness for all functional activities – including hidden ones.

If we only looked at the immediate or direct output of a specific functional activity relative to the amount of input funneled into that task or job, then we would come up with a too-simplistic view of performance. To make it simple: in those cases where subunits of two supporting agencies work on the same project, and where the IT-run unit is unable to pass specific tasks or jobs on time, it is mandatory to reject a not-throughput-or-critical-path function argument and share the indirect performance ratio as well. A similar argument holds for quality control.

4.3. Cross-Functional Teams

1. Definition and Characteristics Cross-functional teams consist of employees from various functions within an organization who are assigned a task to complement the specialist work done by different groups. Unlike a committee, where each group tends to defend its interests, the team is integrated. It works to achieve a common goal, which is a specific project, development, or decision, which usually involves a sequence of activities performed by people with different areas of expertise. Work teams can be created to develop a new product, a marketing campaign, or plans to enter a new market. In technical functions, the coordinated work of engineers, marketing, and production people can ensure achieving the company's competitive advantage. Cross-functional teams can be created to develop a new product, formulate a marketing campaign, or develop plans to enter a new market. In technical functions, the collaborative work of engineers, marketing, and production people can ensure that a physical product has the characteristics that will give the company its competitive advantage.

Usually, one of the great pitfalls of teamwork is the absence of an authority that weighs arguments with conflicting criteria. This leads to problems when there is conflict and disagreement between functions. The majesty of the executive function resolves this problem. The formula works if there is mutual respect between the various functions and an attempt to contribute to the success of the entire task group. Productive work can be carried out by different disciplines: engineering and design development; manufacturing; marketing and sales; distribution; installation and service.

2. Benefits of Cross-Functional Collaboration Some benefits of cross-disciplinary teamwork towards the efficiency of companies can be listed. Approaching the obstacles to people deciding and committing to act in a process fashion that breaks traditional paradigms of function boundaries with the obstacles that deter cross-disciplinary teamwork has four objectives: Shorten the time it takes to bring products, services, and systems to the market; Shorten the time until markets accept products, systems, or services; Improve customer satisfaction, and Reduce the number of defects. Parallel concurrent engineering applied to the design and implementation of advanced manufacturing systems helps to achieve all four objectives.

4.3.1. Definition and Characteristics

Cross-functional teamwork is a widely adopted approach to project-based management used by organizations to efficiently solve complex tasks, shorten product development cycles, and increase revenue streams. Cross-functional teams are usually formally authorized groups of employees from different functional areas who work toward a common goal, such as product development, cost reduction, or quality improvement. A cross-functional project can be a unique endeavor that creates a single, one-of-a-kind product, system, or service, or it can develop a series of very similar products over a period of time.

Cross-functional teams are characterized by having a charter that relates to a unique organizational goal, having a limited life cycle, resulting in specific deliverables, having members who invest time working in a unique environment, interacting regularly, and being led by a project manager or team leader with full authority over assigned staff. During the 1990s, the use of cross-functional teams expanded rapidly in the areas of service, business process reengineering, and quality improvement. Individuals brought together on cross-functional teams during this period were often required to make key decisions and take critical actions that led to major changes in either the organizational structure or its work processes. Such changes often produced dramatic gains in efficiency and effectiveness for the organization. Team members on these newly formed, high-powered cross-functional teams often spent months or even years concentrating their efforts on the design of a new, complex information system for the organization.

4.3.2. Benefits of Cross-Functional Collaboration

Cross-functional teams bring unique benefits to complex projects with goals that cannot be achieved effectively from a single-department perspective. Teams that include members from different departments help ensure that all aspects of a product are considered in the planning stages. In addition to knowledge about their specialized area,

cross-functional team members have broad perspectives about the entire scope of a development project. Early input from all areas involved in creating the product helps identify potential conflicts and pitfalls. All team members commit to the same level of quality in their areas so that no one part of the product holds up the project in the long run. Creating the product is a highly cooperative endeavor, and no one department dominates the decision-making process, develops its schedule, or imposes decisions upon the group. Problems can be solved through brainstorming in a collaborative atmosphere characterized by trust, mutual respect, and appreciation for the unique skills and knowledge each person brings to the process. Conflicts should be expected and confronted openly, expertise acknowledged, and win-win solutions sought that address the concerns of all parties. Managing the dynamics of a well-functioning team is a challenge, but the result can be a strong camaraderie and a team identity more powerful than the individuals involved which encourages a seeking of better products and common ownership in the results.

4.4. Workflow Integration Strategies

Efficiency and effectiveness will be enhanced by focusing on improving interdependencies, not just succeeding individually. Managing organizational boundaries requires a focus on process, through cross-functional integration which will focus on streamlining workflow by bridging structural gaps. This effort will specify technical interfaces and inform other cross-functional integration efforts, reducing conflicts or breakdowns in other kinds of interdependencies. The generic models developed here will help diagnose boundary problems and develop specific strategies to integrate the work between functions. New tools and techniques are available pour aider des équipes transfonctionnelles à élaborer des spécifications sur l'interface de quelqu'un d'autre qui conservera les responsabilités fonctionnelles sans compromettre l'efficacité de l'entreprise. Integrating work at process boundaries promises improvements in overall effectiveness, not only efficiency. Improved boundary specifications will reduce waste at process interfaces, such as rework and long lead times. This creates favorable cost, quality, and service implications for people, from employees to customers. Collaboration will improve on-time performance; thereby also maximizing the strategic benefits to be gained from people – through their tacit knowledge and commitment to success. Workflow integration also promises breakthroughs in unexpected places. Improvement efforts seek breakthrough gains in process outputs; for example cost, speed, and reliability. Some innovations in process management are focused instead on reducing the base, or internally-focused, breakdowns which account for the most common obstacles to predictable base performance. In contrast, little has been written about matching transition, or process interface, investment to dependent output strategic objectives. While slight reductions in transition problems can yield substantial benefits

for dependent-outcome companies, much larger coordinated investments in transition-focused interface improvements are rarely pursued. This gap has many causes – such as the unquestioned acceptance of functional decision-making.

4.4.1. Identifying Workflow Gaps

In Chapter 3, we stated that workflow tools can facilitate cross-functional work, but it wasn't clear how. Thus it is important to clarify how workflow tools function at this more detailed level. Identifying and closing workflow gaps extends the traditional concept of workflow as a way to improve task-specific outcomes by providing a new level of analysis that enables totally different workflow solutions to be deployed as a means of achieving work group, cross-departmental, and firm-wide objectives. This more detailed understanding of workflow also helps to clarify how enterprise systems function. At its simplest, the functions of an enterprise system can be described as the automation of traditional workflow activities. But this is only part of the story, as the discussion of push systems and full integration indicates.

Identifying and closing workflow gaps helps managers to understand where additional capabilities need to be deployed. Identifying gaps in the way cross-functional workflows are managed directs attention to the need for additional tools and techniques to coordinate cross-functional activities, which can then be selected or developed to provide the needed integration capabilities. Selecting the right coordinating mechanism is not simply more of the same. It involves understanding the interactive nature of the workflows and the depth of the linking package associated with each point of contact. It requires recognizing that the expectations of and criteria for the quality of the interactions can differ among functions for the same workflow. Additionally, it reinforces the point that it is possible to identify and close workflow gaps that are associated with the interaction of two or more functions, without addressing all of the activities associated with the workflow and without full integration of those activities. This is an important point since it is not abnormal for the demands on a given function, as a consequence of cross-functional workflows, to change more than once during the period of a strategic season.

4.4.2. Techniques for Integration

Various methodologies can be utilized to tie together disparate organizational workflows. Each technique is distinct, and organizations may find that implementing a combination of models results in the most cost-effective solution to fit their specific needs.

Work-flow formalization is the creation of a document to clarify a work process. By creating process documentation, a unit clarifies the sequence of steps and the specific tasks that comprise an organization's workflow. This documentation can be undertaken with varying levels of detail and sophistication, from a modest outline of a process to a comprehensive text and graphic description of the workflow. The most comprehensive description includes a delineated set of subprocesses, activities, roles, and functions for each individual involved in the execution of the process. Process maps are often used to visually present complex, multidimensional processes.

Process documentation helps to clarify the process and serves as a guide for current and new employees in each affected unit. Process documentation is especially valuable for cross-unit activities that are not a central focus for either group. Such units often lack a well-defined role in the task and unclear expectations regarding their input. These relationships are usually low on mutual relationship trust. Written guidelines can help enhance the likelihood that an efficient and effective process will occur, as well as ameliorate difficulties that arise from time to time. Formalized documents outlining and describing work processes can also lead to decreased redundancy.

Redundant work effort appears to occur in two distinct forms. The first is functionally redundant effort, in which each involved party carries out the same type of task on different occasions. The second is temporally redundant effort, in which each unit performs tasks simultaneously but on different occasions. Specific process documentation can help eliminate both types of redundancy.

4.4.3. Tools and Technologies

Four possible strategies exist for closing workflow gaps. The first is to dedicate resources to cross-functional teams, assigned to fix the problems. These teams focus on a task that will produce greater organizational performance—such as product design, development, or launch—while each functional business unit continues to serve its primary purpose. In this way, an organization can speed up new product creation and reduce cycle time, enhance team mingling and overcome coordination problems, deal with different priorities and difficult tradeoffs, and share best practices.

The second is to optimize systems and proprietary technologies. This approach often takes the least time and introduces the fewest changes. Each function is charged with developing the best way to operate in support of the total workflow. The existing technology may be used, although efficiencies and improvements could be made with better coordination and integration.

The third is to interconnect the various proprietary systems with tools to make them work better together, such as enterprise resource systems, software, email, file transfer

protocols, and video conferencing. This approach is similar to optimizing systems in that it introduces no new, radical changes to a company. It differs in that it does manage logistics, which often means increasing the cost of the flow without affecting the final product. This strategy should be used carefully.

The final and most radical approach is to spend the time and money needed to develop a totally new integrated technology capable of controlling an entire complex workflow such as that required for e-business. Though this may be the most expensive choice, it is also the most effective at creating a breakthrough solution.

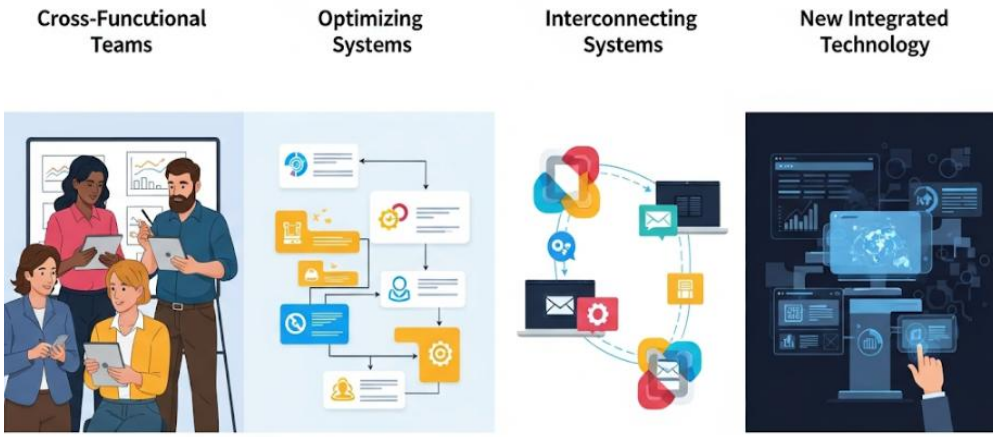

Fig 4 . 2 : Bridging the Divide

4.5. Measuring Impact of Integration

Measuring the impact of integration is a highly complex activity. To begin with, it is often difficult to isolate the impact of integration from other factors that shape the function. Activities not fully integrated in the traditional sense but closely linked with common accountabilities and frequent interchange of inputs can also share many of the performance dimensions, resulting in an ability to deliver on time, quality, and cost. Though there are shared accountabilities and established mechanisms to track deviations and close feedback loops, this relationship does not need to be formalized with frequent face-to-face interactions or the movement of people from one function to the other. Second, many of the performance measures resulting from new designs depend on teams or units that are made up of people across functions. For example, time-to-market or product cost can be management-level performance measures for a product or delivery performance measures for a project. Groups undertaking product development or product support activities would try to create a seamless performance and accountability structure.

Why is it critical to measure the impact of the integration on organizations? To start with, the cost of product development is huge and growing, and so are the costs related to product support and service operations. In many industries, particularly those engaged in technology-intensive and information technology-based activities, changing event sequences to products and services and industry interrelationships are quite visible. They are being shaped by rapid technology obsolescence and stiff industrial rivalry, as companies refuse to sit back waiting for the next campaign and customer opportunity.

While the visible linkage between these activity costs and the continuous pressure to develop higher-quality products and provide better service for the same or lower cost emphasizes the need for better integration, the painful realization has commenced that the level of organizational capabilities needed for sustained success can only come from outcomes that are higher than their sum.

4.5.1. Quantitative Metrics

In this section, we will briefly cover metrics that are more commonly used in evaluating cross-functional integration designs. The useful types of metrics that may be employed in assessing the performance of operations at varying levels are descriptive statistics, deterministic models, and simulation-returned statistics. The types of metrics used in comparison evaluations will be strongly influenced by the importance of the decision problem and the stage of investigation. As the investigation proceeds from a loose conceptual nature to a detailed design, metrics will likely evolve from simple deterministic to detailed simulation returned evaluation. The goal of the evaluation process is to explore many possible design decision methods, in some logical or sequential manner. If they fail any of the admissibility criteria at any phase of the process, it is unlikely the integrity evaluation would be used for any production design.

Metrics such as the expected value of information, value of control, and reliability concepts, are often not easy to demonstrate. In addition, we would use components based on released flows to evaluate system control. Descriptive statistics models deal well with prediction and often demonstrate other desirable traits. Very simple performance metrics have been found effective, and when evaluating very complex models, attempting to develop a more detailed metric is often fruitless. Descriptive summary metrics are numerous and can be based on central tendency factors and dispersion measures. These are relatively simple to calculate, communicate, and understand. They are also key ingredients in many more complex evaluations and therefore natural for initial experiments. What is almost essential is stating the quality of the returned data. It must allow the addition of significance testing or other determination of the quality of the mean.

4.5.2. Qualitative Assessments

Qualitative evaluations are valuable for attaining a well-rounded picture of the effects of integrated workflows on people and organizations, in particular when quantitative metrics are missing or indirect. Additionally, qualitative assessments enable the collection of information about very recent activities and very specific aspects of use that have not yet contributed to any observable trends in quantitative metrics, and they can be tailored to elicit organizational or individual goals related to the connectivity of workflow as higher or lower-level end goals of specific work tasks, in particular tasks that contribute to the cross-functional flow of inputs or outputs or the connection of interacting roles. Besides being useful to sensitize the audience about the influence of better workflow connectivity on their work motivation, commitment, and behavior, qualitative analysis can support the interpretation of quantitative results. For instance, qualitative assessments can confirm the existence of a performance problem that a specific integration is preventive for, such as the rapid short-term detection of a fault to decision responsibility and its effective resolution through the immediate connection of these two interacting roles for implementations affecting functional safety. It may help to develop a context for a negative turnaround in a quantitative result from a performance improvement related to connectivity, such as an initiative-based risk reduction or delayed initiative-based risk-taking behavior associated with high aftershock trepidation in project management after the detection of a deficit of a project's performance. Qualitative benchmarks of use, performance, and workflow connectivity, or descriptions of the context of flow connections, can further help validate or complete quantitative results. Apart from the identification and development of workflow integration scenarios that require quantification to substantiate their business case, the nature of qualitative assessments suggests their focus on specific targets or groups of interest.

4.6. Challenges and Solutions

1. Common Obstacles

Despite the benefits of cross-functional workflow integration, organizations may experience challenges throughout the process. Notably, in large organizations, there may exist several functional silos each with their specific purposes, values, goals, objectives, work processes, and deliverables. As these departments are essential for the functioning of the organization, the transformation of single departments is usually a low priority. However, for cross-functional workflows to function well, the management must transform the "isolated", functional department into a "shared" and high-performance transformation function across all relevant departments. The success of the transformation is largely based on organizational culture.

Potential risks, identified early on, can be mitigated or avoided entirely. Organizations should keep in mind that there are numerous information technology solutions in the marketplace that the organization can use to establish cross-functional workflows. Workflow software systems can be used to create electronic document routing systems. These systems can be programmed with workflow rules so that required information achieved in one department is automatically routed to the next department so that the next step in the cross-functional workflows can be completed.

2. Strategies to Overcome Challenges

Moreover, the management should devise a careful communication strategy to educate managers in each of the relevant functions about the benefits of cross-functional workflows. Their input can lead to improved cross-functional workflow design and facilitate acceptance of a change approach that many employees may consider painful because they will require changes in their current behavior and working practices. During the transition, proper support systems and procedures should be in place to help employees through the transition and change process. Also, organizational management should find ways to reward functional personnel for their successful handling of the cross-functional activities associated with the implementation of cross-functional workflows.

Consequently, it is important to bear in mind that achieving cross-functional workflow integration is a long-term goal that is built gradually. As experience is built and recognition is achieved in the company, full cross-functional integration is possible through flexible re-engineering as required.

4.6.1. Common Obstacles

Although cross-functional integration presents great advantages to the operational and financial performances of the business, this is difficult to achieve. Some difficulties arise merely from our tendency to maintain status quo and predefined roles whereas no one is directly responsible for the entire hospital's operation. Cross-functional workflow integration requires greater investment upfront than addressing major barriers in point-to-point interactions among individual pairs. Traditional order management systems of hospitals could be enhanced to support this effort to have one large system see and oversee all orders with logic for traffic control and error checking on dependencies across various functions, limiting manual intervention for diverse people functions. Workflow integration also requires initiation at the politics layer with executive endorsement to increase transparency and build trust to stimulate all groups to move toward the assigned goal simultaneously across simultaneously changing dynamics. Each cross-functional dependency exists within larger patterns defining formal

functional boundaries and organizational hierarchies. Hence, wait times between functions are expected to be disallowances of some rule sets about how the various functions devote their energy to the need. These functions might allocate their advantages around the dependency via, at best, an agreement on informal rules on what is an acceptable amount of waiting time at each spot, via shared financial incentives that disallow too much waiting, or, at worst, top-down authority that forces the functions to adhere to the decision of one function whipped out of a large set of alternatives. Predictive models can improve our capacity to work better across functions operators and insurance companies. Each of these is a crude approach to deal with the inherent weakness of the bounded rationality within specializations juxtaposed with the systemic goal-oriented nature of supply chain behavior in health care.

4.6.2. Strategies to Overcome Challenges

Poorly formulated process strategy statements can jeopardize the value of pursuing integration. Compelling expectations generated by highly ambitious innovation projects can force organizations to intervene in the absence of clarity on purpose. New products and services can be hampered by integration failures. If organizations focus on preordained synergy or coordination targets, prefer to establish alignment of quality goals over shared opportunity and risk, and attempt to create cross-sector management or technology offices with excessive authority or pervasive bureaucratic reach, they can detract from innovation productivity rather than enhance it. Arrayed against the desire for integration, the preference for ambidextrous flexibility can hold sway.

Innovative organizations elaborate and integrate specific, well-thought-through purpose statements on what and how they wish to integrate; prioritize such innovation-critical integration; and protect remaining innovation niches, except in times of obvious need. These declarations or statements do not need to be unique, and indeed useful integration may be common for many organizations. Coding societal objectives associated with particular functional sector value while describing goals for market value and associated innovation vector can help with thematic guidance of project activity. Also valuable are action statements of the strategy — simple, one- or two-sentence themes and directives that focus employees on specific, core outcomes while acknowledging key tensions to be managed.

A portfolio view can code each value statement with a recency date; sequence it according to importance; correlate the integrated strategy with the organization’s leadership system; and describe what is to be integrated and how often, at what level, be it project, product, or both. These two perspectives help give a roadmap for motivation and action. In other words, recognize that any kind of innovative organization is ambiguous but that effective management of such ambiguity demands more limiting

statements than one-word mottos, resting on a willingness to allocate time with innovation tension before the business is too important to allow for much leeway.

4.7. Future Trends in Workflow Integration

Whether an organization takes a mechanical or organic approach to workflow integration depends on its structure. For complex organizations, it is important to have specialized skills to execute work effectively and efficiently, whereas decentralized organizations will depend on integrated teams that adjust to dynamic responses. There will always be advantages and disadvantages to the two approaches, though the key will be to integrate the best of the two in a balanced way. Future trends will ensure that absolute structures aiming at total mechanistic or organic structures will not work because of the turbulence affecting all organizations. Trends will cause very different tasks to favor different types of structure and this will be true at the same time for the same task in different locations and at different times for the same task. The most effective solution will mean an organizational architecture balancing several motives for specialization and a motive for integration at the same time.

There are several different technologies being developed to aid organizations in enhancing their workflow processes. These new process technologies, re-engineering efforts, knowledge-based systems, soft systems methodologies, and groupware tools will help organizations make important shifts. These include where work is done, how work is conducted, and an increase in the emphasis on relationships and knowledge. These new applications will also lead to dramatic changes in customer-supplier relationships. Recently, companies have begun to build virtual enterprises by forming alliances with other organizations for the purpose of sharing resources and expertise. Advanced telecommunications, computer, and information technologies enable businesses to enhance their products or services by integrating the offerings of independent but cooperating companies. Through the use of advanced technology, the boundaries of organizational structures will be redefined.

4.7.1. Emerging Technologies

Despite the fact that workflow management initiatives have tended to arise in the fringes of IT strategy and organizational development, they can benefit by exploiting advanced technologies, especially those emerging from digital library projects. Several new technologies can enhance cross-functional integration and lead to new archetypes of seamless workflow. These technologies include semantic models, service-oriented architecture and messaging, business process modeling and management, a new generation of information retrieval technologies and tools for retrieval-based integration,

and new user interface metaphors. These will make it possible to automate actions that were impossible or prohibitively expensive. Business process workflow technologies have capitalized on the value proposition of outsourcing, but it is more difficult and expensive to manage internal cross-functional workflows. Companies that have focused on cross-functional workflow integration have often done so for reasons of competitive advantage. However, such organizations have still relied on the physical co-location of functionally diverse temporary workforces, as in the construction industry. With the advent of Internet-enabled capabilities for rapid, dynamic configuration and reconfiguration of information systems, coupled with new and emerging technologies for interoperability at the systems, data, and business process levels, organizations of the future may be able to rely increasingly on semi-permanent federations and ad hoc alliances. Flexible firms depend on core competencies and alliances with flexible subcontractors. Business process integration, using rapid systems development, project software management, and workflow technologies, maybe the best means to support the organization's temporary structures, facilitating coordination and resource sharing.

4.7.2. Predictions for Organizational Structures

Consulting analysts make a number of predictions regarding organizational structures. They expect that organizational memory capabilities will change visibly in the next five years. “Specialized resources of the past will be transformed into integrated resource pools that will support high-value service commitments that span selected Customer and Product markets.” They believe that people management practices would require substantial redesign to facilitate organization memory. They predict that more organizational work would be done by companies that optimize organization memory coordination and control capabilities. "Virtual Industrial” organizations will abound. "Virtual factories” will emerge as component, subsystem, and assembly technology develop. Mass customization, diversity, and variety would be the watchwords for industrial organizations, and they reject the comparison of a business that focuses on one niche with a business that builds to stock. “Learning organizations will be the preferred form. Learning would be the primary cultural vector linking supply chain management decisions with business strategy... Hardware and software will not be the job for the small shop, but rather for corporations that integrate tools of information management into knowledge products and services.” B2B networks will proliferate, and companies will specialize in their parts of the new supply chain.

The information age will bring networks and integrated teams, to think, operate, function, and sell as one. They are strategic partners, formed and dissolved for specific products or projects, or for some time. R&D and Production may be separate, as now, as the product becomes complex but integral. However, it is doubtful whether “...the future

of management consists of 'partnering' literally everything and every relationship of any importance in a production process with another company, and treating employees, whose labor is critical to your success, to a business relationship that is 'at will.'"

4.8. Conclusion

This paper has addressed the integration of cross-functional workflows as a means to enhance organizational efficiency. It has proposed a model within which functions and their local processes are identified, how they relate to each other across function boundaries, and be effectively integrated. This results in defined process steps that highlight independent, interdependent, and dependent relationships between functions. Furthermore, it is proposed that there are generic customer, resource, and activity types to describe most process steps. A case study highlights both the challenges that support the need for careful planning, design, and implementation of cross-functional workflow integration, and the potential resulting benefits.

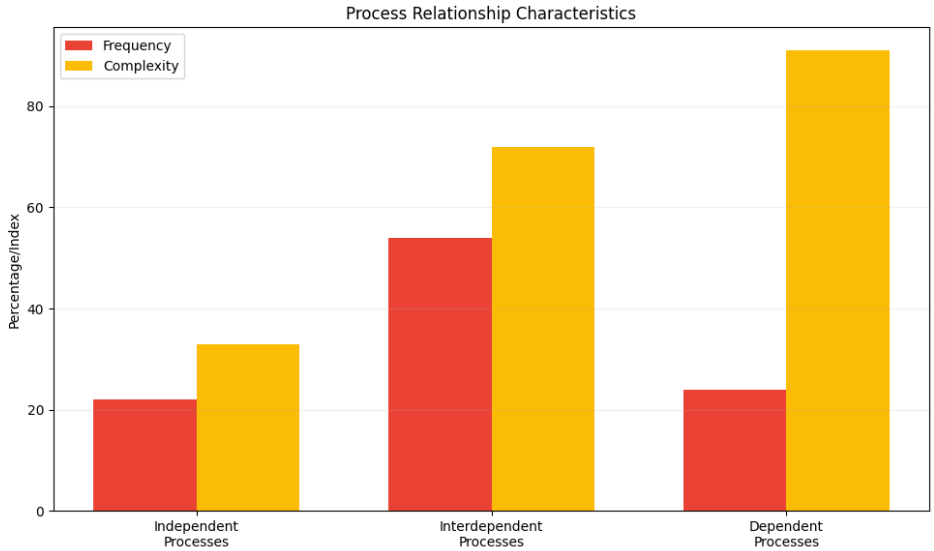

Fig 4 . 3 : Process Relationship Characteristics

The current emphasis on improved organizational efficiency is typically directed at cost-cutting activities, either through improved utilization of existing resources, or decreased levels of support service cost. The evidence highlights that the potential for increased efficiencies through improvements in internal organizational arrangements is often greater than through outsourcer activities. The integration of cross-functional workflows provides a powerful framework and methodology that ensures process improvements are sustainable as a change is made from management-directed procedures to an organizational orientation to service customers. However, while Cross-Functional

Workflow Integration has a potentially large payback, it also needs careful review and consideration. It does not necessarily mean that the integrated approach should be adopted across all services. Some services still clearly lend themselves to a local, ad hoc, activity-centered process flow management system.

4.8.1. Final Thoughts and Implications for Practice

Visualizations describing tasks and responsible actors can be very efficient in aligning work throughout the entire transaction life cycle. This is because they can improve comprehensibility and help convey meanings about both tasks being performed and how those tasks should be performed across units. Building consensus symbols may increase the extent to which representations employed can be effective in conveying shared meanings and understanding. Several drawings can be rehearsed in separate meetings to compose a comprehensive visualization that is informative and communicative enough to fulfill both normative and expressive functions. Their ability to communicate a vision for an activity is found to be a basic requirement for symbols to convey meanings and facilitate sensemaking on the responsibility for inter-unit workflow transmissions, and also sensegiving to others who intervene on – or may be affected by – it.

As with all studies, this one has limitations. While providing original insights on a little-explored issue, our exploratory considerations are based on a single case study. As a consequence, they may be particularly sensitive to the specific features of this case, reducing the reliability of our insights. However, many conclusions can be easily generalized to any type of workflow, and we suggest that the entire tool proposed can be used to visualize any inter-departmental workflow. In addition, while discussing implications for practice, we provide practitioners with practical suggestions, including a sequential set of simple steps for creating a detailed visualization of a responsive workflow. Practitioners can follow these steps and change the sequence according to their preferences and specific needs, keeping in mind the need to guarantee enough effort to repeatedly define all elements of interest until a stable transformation is reached.

References

Goyal, A. (2021). Enhancing engineering project efficiency through cross-functional collaboration and IoT integration. Int. J. Res. Anal. Rev, 8(4), 396-402.

Ahmad, T., Boit, J., & Aakula, A. (2023). The role of cross-functional collaboration in digital transformation. Journal of Computational Intelligence and Robotics, 3(1), 205-42.

Attah, R. U., Garba, B. M. P., Gil-Ozoudeh, I., & Iwuanyanwu, O. (2024). Cross-functional team dynamics in technology management: a comprehensive review of efficiency and innovation enhancement. Eng Sci Technol J, 5(12), 3248-65.

Attah, R. U., Garba, B. M. P., Gil-Ozoudeh, I., & Iwuanyanwu, O. (2024). Cross-functional team dynamics in technology management: a comprehensive review of efficiency and innovation enhancement. Eng Sci Technol J, 5(12), 3248-65.

Mokkapati, C., & Goel, D. P. (2024). Driving Efficiency and Innovation through Cross-Functional Collaboration in Retail IT3. Available at SSRN 4984118.

Şişu, J. A., Tîrnovanu, A. C., Mujaya, N. J., Ito, S., & Obreja, M. M. (2024). The Role of Digital Solutions in Enhancing Organizational Efficiency. Revista de Management Comparat International, 25(4), 764-774.