ISSN: 2634-9221
European Journal of Applied Sciences; Vol. 14 No. 06 (2026) (62-77)
https://doi.org/10.14738/ejas.1406.12617

Change Management on Large Multi-location ERP Projects

Josip Nađ

Konex d.o.o., Consulting department, Varaždin, Croatia

Abstract: Large manufacturing companies that implement a unique integrated business ERP (Enterprise Resource Planning) system, simultaneously at a large number of geographically distributed production locations within a single legal entity, face a challenge of exceptional complexity. The difficulty is further increased when these locations operated with separate, locally adapted ERP systems, so employees, in addition to having to learn to use a new tool, also have to fundamentally change their way of thinking about business processes, data location and responsibility for results. Relying on the available literature, project experience and two published case studies [1, 2], this paper synthesizes the key principles of effective change management, analyses the psychological impact of ERP implementation on employees and identifies seven critical risk factors that determine the success or failure of such projects. For each risk factor and for the broader framework of change management, practical recommendations are provided, and at the end, an overview of final tips for managing change in this type of project is provided.

Keywords: Change Management, ERP, risk factors, master data, production interfaces.

INTRODUCTION

Implementing an enterprise resource planning (ERP) system is generally recognized as one of the most complex and drastic transformations a manufacturing company can undertake. When this transformation must occur simultaneously across dozens of geographically distributed manufacturing sites, replacing a fragmented structure of locally customized systems, the challenge is amplified in a way that standard project management frameworks struggle to address.

Change management has become so strategically important that the way in which change is implemented directly determines a company's competitive position [1]. A system that is technically flawless but poorly accepted by users will not achieve its intended value. Similarly, a technically poorly implemented implementation will fail no matter how well the human dimensions are managed. Technical and human factors are inseparable and both must be addressed with equal intensity. Literature [2] provides a complementary perspective through a case study of one location where a manufacturing company successfully doubled its production capacity in five months using a well-established ERP system and a strictly managed change management process. The central insight is that neither technology nor managerial approach alone is sufficient; both must be systematically designed and systematically implemented, and the robustness of the underlying ERP system is a prerequisite for enabling the entire transformation. It is precisely such robustness of a centralized ERP system that must be sought in the case of a large number of manufacturing locations, which is the subject of this paper. The paper additionally relies on project experience where, within the framework of a project divided into two phases, a global ERP

system was implemented in parallel at almost two hundred production locations within a single company, i.e. a single legal entity.

The main objective of the paper is to set up a comprehensive framework for change management in large ERP implementations. The basic elements of change management, a structured analysis of critical risk factors and the psychological impact of the project as a major change on employees are covered.

The Nature of the Challenge

According to [3], projects can be categorized into four groups: simple, complicated, complex and chaotic (Figure 1). By a reasonable assessment of the situation and project requirements, it is easy to conclude that the implementation of a single integrated ERP system simultaneously at more than a hundred production locations must be placed in the "chaotic" quadrant. Several characteristics of this scenario lead to such a classification:

- Each location has its own local managerial culture, workforce characteristics, and legacy process configurations, accumulated over years of using local ERP systems.
- The number of simultaneous changes creates interdependencies that cannot be fully planned in advance.
- The organization must maintain full continuity of production throughout the entire implementation period; case studies [1 and 2] identify this as one of the most difficult balances to maintain in high complexity projects, as there is a constant conflict between the need to maintain continuous production and the disruptive demands of major technological change.
- The risk of Go-Live failure at any single location can disrupt the supply chain.

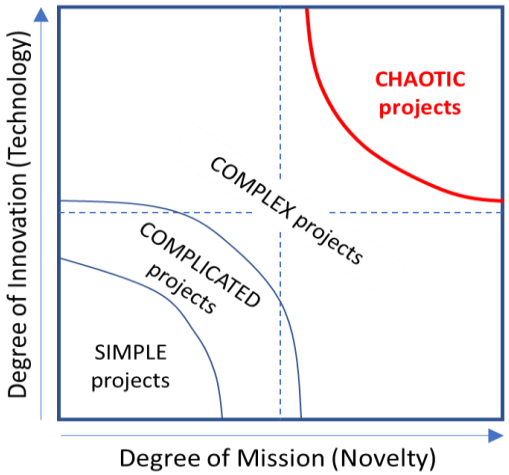


Figure 1: Project categorisation [3]

Recognizing a project as chaotic is a prerequisite for choosing the right management approach. Sources [1, 3] suggest intuitive change management as an appropriate way of working in the case of chaotic projects. It is a style in which the change manager supplements the formal methodology with intuitive judgments and partial assumption of project coordination responsibilities.

PSYCHOLOGICAL IMPACT OF AN INTEGRATED ERP SYSTEM

The scenario examined in this paper adds a critical dimension: employees, in addition to adopting a new tool, are also abandoning systems they know well, systems that have become part of their professional identity and daily cognitive routine. Understanding this psychological dimension is a prerequisite for designing an effective way of managing change.

Loss of Local Expertise

In a manufacturing company that operated with separate ERP systems at different locations, these systems were typically customized over the years to reflect local processes, terminology, and workarounds. Experienced employees have accumulated significant expertise in navigating the local system. This knowledge brings status and a sense of professional competence. When a single integrated ERP replaces this structure, that accumulated expertise becomes largely obsolete, and the employee who was the local "ERP expert" is suddenly a novice again. Novices are afraid of making mistakes, and in the case of such disruptive changes, the mistakes are bigger and more numerous, so users experience excessive fear or even resistance to adopting the new way of working. The change manager must prepare the organization for this reality, not pretend it won't happen.

Shift from Local Autonomy to Integrated Responsibility

Separate ERP systems typically preserve a degree of local autonomy. Local managers can make configuration decisions without seeking approval from the central IT function. A single integrated ERP system fundamentally changes this way of working. Data entered in one location is immediately visible to central business functions, other locations, and corporate management. For employees accustomed to local autonomy, this transition may feel less like an upgrade and more like a form of oversight.

There is also a positive side to this dynamic: a successfully implemented and robust central ERP system of the company becomes a platform that enables fast and successful business transformation. The lesson is that integration, properly communicated, is a source of organizational strength. This message must be actively developed by the change manager.

Cognitive Load of Process Standardization

One of the most underestimated consequences of implementing an integrated ERP is the cognitive load imposed on employees who must forget established process habits and replace them with standardized procedures. In a case study [1], this was documented in a manufacturing environment where every step in the logistics chain had to be completely redesigned. It is well known that forgetting an established routine is significantly more difficult than learning a new one from scratch, as the old neural pathway remains active and competes with the new one during the transition period. In practical terms, employees will tend to revert to old behaviours, especially during peak production, unless the new process is consistently monitored through supervision, feedback, and performance management. The change manager must anticipate this regression and build mechanisms into the post-Go-Live support plan to reinforce all relevant employee competencies.

Fear of Transparency and Performance Visibility

An integrated ERP system creates a level of operational transparency that many employees have never experienced before. Details of production quantities, quality metrics, logistics cycle times, cost types, and financial variances are recorded in real time and made available to higher-level management.

For those whose effectiveness has been hidden, this realization becomes a source of fear and anxiety, manifested in the form of expressed scepticism about the reliability and quality of the new system. Insistence that the old system was “good enough” and distrust of the new data entry requirements are expressed. The role of change manager requires perseverance, a willingness to share uncomfortable truths, and above all, the ability to negotiate with senior management to gain the necessary support [1].

The Identity Challenge for Middle Level Management

Middle managers face an identity challenge. Their authority was based in large part on superior knowledge of local systems and processes. When these systems are replaced and processes are standardized, the knowledge gap that supported their authority is reduced. Their value must shift from “I know how this system works” to “I know how to lead and develop my team through change.”

It has been shown to be beneficial [1] to organize workshops in which managers are given the opportunity to view the project from unexpected perspectives. This approach has proven effective in illuminating problems and building authentic engagement. In the case of large multi-site implementations, similar interventions are needed: structured workshops in which managers can express their observations, receive honest answers, and be repositioned as active change agents, rather than just passive recipients.

Implications for Change Management Design

The psychological dynamics described in the previous chapters have direct implications for change management:

- Employees need to hear that their expertise was valuable and that the transition to the new system will be truly difficult; communication that focuses solely on the benefits of the new system, without acknowledging the disruption it causes, will be perceived as dishonest and will erode trust.
- The training program must bring knowledge and confidence; it is essential to enable users to work in a simulation environment where they can practice without pressure and fear of disrupting the existing live information system.
- Future users of the new system need to be categorized into at least three groups: end users with authorizations to work only at their location, superusers with authorizations to work on their functionalities and at multiple locations, and coordinators, carefully selected production experts with authorizations to work on multiple functionalities, at all locations.

- The post Go-Live support period must be longer and more intensive than is typical for a standard ERP implementation, with active monitoring of end-user acceptance and targeted additional training in response to identified signs of resistance.

Seven Critical Risk Factors

Large, multi-site implementations of a single ERP system are exposed to a set of operational risks that can, individually or collectively, disrupt any project, no matter how well-designed. The seven risk factors presented below are the realities facing project leadership, including the sponsor and change manager. Each risk factor requires a dedicated response and a thorough approach.

Table 1 provides a summary of all seven factors, their primary impact, and the key risk reduction principle for each. The following sections provide a detailed analysis of each factor.

Table 1: Summary of seven critical risk factors for multi-site ERP implementation.

	Risk Factor	Primary impact (Consequence)	Key risk reduction measure
1	ERP system	Go-Live failure at the project level	Full load performance testing; alternative plan
2	Consultants	Lack of business knowledge, poor communication	Careful selection of consultants; structured knowledge transfer
3	Teal Leaders	Delayed decisions; inconsistency	Matrix of decision-making powers; quick ways to escalate problems
4	Master Data	Erroneous transactions, reporting errors	Master data management program; data harmonization before Go-Live
5	Production Interfaces	Production downtime, data loss	Interface testing per location; alternative operating procedures without an interface
6	Internet	System unavailability at certain locations	Redundant connection; defined procedures for offline operation
7	End Users	Poor acceptance of the new system, failure to comply with defined processes	Coordinators for key areas; super-users for local support; phased implementation; long-term post Go-Live support

Figure 2 provides an overview of all seven risk factors by impact and probability, as assessed at the beginning of a specific multi-site project. It shows that in the case under consideration, the risks of a poor ERP system and insufficiently qualified consultants were assessed to be extremely unlikely (SAP S/4 and a reliable consulting firm were selected).

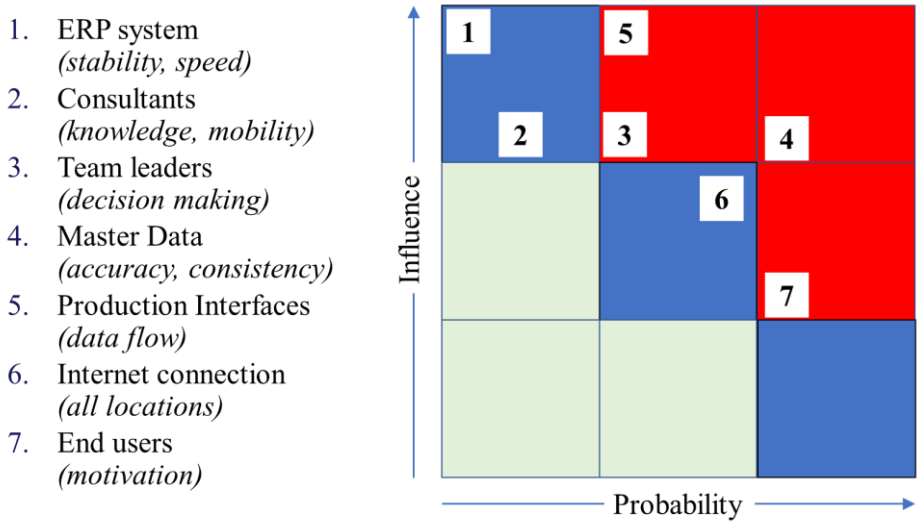


Figure 2: Seven Risk factors

On the other hand, the risk related to decision-making (team leaders) and the risk of production interfaces were assessed as medium probable, and the risk of motivation of end users was assessed as very probable, but not maximally influential. The risk of master data was assessed as the most dangerous risk. Based on this assessment, the entire project team gained insight into the great importance of the role of the change manager, who had to find optimal ways to neutralize critical risks.

ERP System as a Risk Factor

The ERP system itself is the foundation on which all other elements of a business process standardization program depend. Its stability, speed of response, and capacity to process large amounts of data are considered. Literature [2] provides an explicit conclusion that a successful rapid transformation in a single-site case study would not be possible without a pre-existing fast and robust ERP system. In a multi-site context, this dependency increases by several orders of magnitude. Namely, a system that works satisfactorily at one site may be completely incapable of handling the large transaction volumes generated by numerous sites operating simultaneously. The key technical dimensions of ERP system risk are threefold:

- Response time degradation: as the number of concurrent users grows and the volume of real-time transactions multiplies, system response times that were acceptable in a single-site environment can become unacceptably slow, directly disrupting production operations.
- Online data processing capability: many ERP systems rely on nightly or periodic batch processing of quantity and financial postings, inventory valuation, and production order settlement. In a multi-location project, these windows can exceed the available time, creating data availability problems at the beginning of the next business day. Also, periodic processing means a lack of information from the last processing until the moment of analysis.

- Database growth and the archiving challenge: the volume of transactional data generated by numerous locations will grow rapidly, and without a proactive archiving strategy, database performance may gradually deteriorate.

Change management is often overlooked in this risk factor. System performance issues, in addition to being a technical inconvenience, directly undermine user trust and overall acceptance. An employee whose first experience with a new ERP system is that it freezes during a critical production posting operation will develop a negative association that is difficult to reverse later.

Unresolved system performance issues during Go-Live will become critical: users will find workarounds, data quality will deteriorate, and the system's reputation will be at risk. The change manager plays a significant role in controlling this risk, by preparing future users for possible initial problems with system performance.

Risk mitigation measures under the responsibility of change managers:

- Insist on performing load and performance testing that simulates peak concurrent usage at all locations.
- Establish a defined procedure for returning to the old way of working for each individual location in the event of unavailability of the central system.
- Implement proactive monitoring and alerting system performance metrics.

Consultants as a Risk Factor

When it comes to ERP consultants, it is imperative to consider, in addition to their knowledge of the ERP system, their level of business knowledge, mindset, and mobility. Source [2] identifies the hiring of an experienced ERP consultant as a successful and rapid management action in a single-site case study.

The selected consultant took full responsibility for all ERP and IT preparation activities for five months full-time, managed communication with external system developers, and served as the primary knowledge resource for the project team. The outcome would not have been achievable without this person.

The multi-location project is about building and maintaining an entire consulting team capable of simultaneous support directed towards several geographically dispersed locations. This creates several different dimensions of risk:

- A central ERP template can only be created by consultants with deep expertise in the relevant ERP system, a concrete understanding of the relevant production processes, financial integrations and inter-location logistics processes; consultants with only a superficial knowledge of the system will produce a template that requires refinement during the final phase of implementation at the locations.
- Consultants who optimize individual modules without knowing enough about the nature of business and the consequences of cross-functional integration, create a configuration that works satisfactorily in isolation, but fails in a real production system, when everything is based on integration.

- In a project that involves a large number of remote locations, consultants must be truly willing to travel to locations that may be geographically dispersed, operationally demanding, and culturally unfamiliar. Site visits are required, including observation of actual production processes, interviews with end users, and analysis of the implications of implementing an integrated ERP system. The work of consultants "remotely" is a significant risk factor in this context.
- Consultant turnover is a real risk that must be actively managed. Multi-location projects are often multi-year, and consultant turnover is a harsh reality. When a key consultant leaves a project like this, he takes with him, among other things, the accumulated understanding of the reasons for making certain project decisions. Therefore, it is necessary to ensure a structured transfer of knowledge and documentation to prevent prolongation of project completion.

Risk mitigation measures under the responsibility of change managers:

- Rigorously define consultant profiles: deep expertise in relevant functional areas and integration knowledge and experience in the manufacturing industry are required.
- Plan and organize regular work tours of production locations as a standard project activity, not an exception.
- Require consultants to provide structured project documentation that includes the system configuration and the reasons for that configuration; functional specifications are not sufficient.

Team Leaders as Risk Factors

Team leaders must be quick and efficient in making decisions, and must be free to escalate problems. A case study [2] identifies the speed and quality of managerial decisions as one of the most visible success factors of process transformation: the success of management was most evident in quick, bold and timely decisions and top motivation of the project team and all employees. This observation becomes particularly significant in a multi-location context, when dealing with a large number of decisions that must be made at high speed. At the central level, team leaders must make architectural decisions about the ERP template that will manage all locations. An example of critical decisions in the case under consideration is the definition of logistics facilities and profit centres. These decisions are difficult to change once implementation begins, and bad decisions spread across the entire portfolio of locations. At the local level, team leaders must resolve process conflicts between the corporate template and local operational realities, manage the competing demands of project delivery and production continuity.

A characteristic aspect of the failure of team leaders in large ERP projects is not incompetence but precisely the avoidance of decision-making. Faced with truly difficult choices that involve trade-offs between conflicting legitimate priorities, team leaders often postpone or delegate decisions that are solely within their purview. This creates a series of unresolved issues that ultimately manifest as a Go-Live crisis. The role of change managers in such cases is irreplaceable: they must be persistent and boring, willing to say things that

no one wants to hear and sometimes even provocative in communication with senior management.

Risk mitigation measures under the responsibility of change managers:

- Define a decision authority matrix: specify which decisions can be made at the site level, which require projects approval, and which require corporate sponsorship; establish a maximum decision resolution time for each category, with automatic escalation if the deadline is exceeded.
- Define with team leaders the proper ways to resolve highly likely conflicts between the global template and local processes, and how to achieve the necessary compromises in the use of project resources.
- Make the cost of avoiding decisions visible.

Master Data as Risk Factor

Master data in an ERP system represents the fundamental reference data that defines products, business partners, production resources, components and operations. They must be accurate, consistent and harmonized. However, despite their known importance for the correct operation of the system, for unknown reasons they are one of the most underestimated risk factors in large ERP implementations. Although it is quite logical that a perfectly configured transaction system with poor and inconsistent master data will produce inaccurate results, it is very difficult to motivate users to start working on checking and cleaning master data from the very beginning of the project.

The criticality of master data is illustrated in the literature [8]. It is known that in the case of ERP systems, only 1% inaccuracy in production master data causes as much as 5% inaccuracy in production planning. The example discussed in the case study [2] shows that the entire financial process for service production, with special rules for material ownership, cost allocation and invoicing, depended on precisely configured master data structures that did not exist before the project and had to be created from scratch.

In a multi-site implementation of an integrated ERP system, master data represents a specific and particularly severe form of this risk: the same physical object, raw material, finished product, business partner, may exist under different codes, different descriptions, different units of measure, and different classification structures in each legacy system. Before these objects can be loaded into a single ERP system, they must be identified, cleaned (de-duplicated), and validated. This process is known as master data harmonization. It is always very time-consuming and regularly fraught with conflicting situations.

Master data management is a critically important topic. Master data ownership is both a technical and political issue: decisions about whose idea of how to code material master records will become the corporate standard, which supplier records will be kept and which will be merged, how cost centre hierarchies will be restructured, all have implications for local managerial authority, reporting visibility, and the sense of influence within the company. The change manager must be actively involved in master data management,

primarily as a mediator of the organizational conflicts that these decisions generate. It is recommended to appoint a production master data coordinator with excellent knowledge of production processes and the qualities of a good communicator and a fast learner.

Risk mitigation measures under the responsibility of change managers:

- Insist on the implementation of analysis and harmonization of master data at the very beginning of the project
- Establish a master data management body with clear decision-making powers, and a dedicated coordinator for manufacturing master data
- Define data quality acceptance criteria that must be met before Go-Live approval
- Implement data quality monitoring as an ongoing project indicator

Production Interfaces as a Risk Factor

Modern manufacturing operations generate enormous amounts of data. In an integrated ERP environment, this data must flow reliably between production machines, MES production execution systems, and ERP systems. The stability and reliability of these interfaces is a top-level risk factor, as an interface failure in a manufacturing environment can halt entire production and cause major losses.

Literature [2] directly addresses this risk. The entire tracking system implemented in the case study depended on a network of scanning devices and interfaces that linked the physical movement of packaging units to their digital records in the ERP system. Each packaging unit had to be scanned at every point of movement, and each scan had to be recorded in the ERP system in real time. A failure at any point in this interface chain would break the traceability records required by the customer, with contractual and operational consequences.

In a multi-site ERP implementation, interface risk increases as the diversity of production environments increases. Different locations have different machine ages, different communication protocols, different MES platforms, and different levels of existing automation. A standard interface design that works reliably at one location may require significant adjustments at another. The reality of multi-site implementations is the need for separate interface testing (and all other production processes) at each location. For planning and organizing production testing, it is desirable to appoint a special coordinator who will be directly involved in designing sufficiently high-quality test processes with all the necessary details, in order to gain confidence in the correct operation of the new ERP system.

Risk mitigation measures under the responsibility of change managers:

- Conduct an inventory of production interfaces by location before implementation
- Require testing of each production interface independently and in full before Go-Live; do not rely on successful testing at one location as a substitute for others.

- Define operating procedures in case of interface failure and conduct operator training for such cases

Internet Connection as a Risk Factor

Every location within the scope of the project must have a fast and stable internet connection. In an era where ERP systems are predominantly hosted in the cloud or accessed through central data centres, internet connectivity is a core function on which the entire enterprise depends. For an implementation that spans a large number of locations, the quality of connectivity can vary significantly: from modern facilities with broadband connections to outdated industrial sites in places where a reliable internet connection is a utopia.

The consequences of an internet connection failure in a manufacturing environment are severe: users cannot log in, transactions cannot be posted, production orders cannot be confirmed, and goods movements cannot be recorded. If the failure is long-lasting, production decisions have to be made without system support, and the accompanying manual records create problems with data integrity and input sequence. A case study [2] implicitly demonstrates this infrastructure dependency in the case of high-demand material traceability: the entire scanning system would be rendered non-functional by any significant internet connection interruption.

In a multi-location context, connectivity risk must be assessed for each location separately, and no location should go Go-Live without a connectivity solution that meets defined minimum standards for throughput, latency and data availability. Due to the large number of locations, it is useful to include this type of checks and records on all individual locations in the scope of work of the special coordinator in charge of final preparations and control of the entire process of preparation for Go-Live (Cut-Over).

It also proves useful to organize a trial Go-Live at several production locations, where all business processes would be performed on the test ERP system for, for example, two weeks. For the trial Go-Live, it is necessary to ensure the participation of all relevant persons responsible for master data, production orders and interfaces related to the selected locations.

Risk mitigation measures under the responsibility of change managers:

- Conduct an audit of the connectivity of each production location
- Define minimum standards for internet connectivity
- Require an alternative way to access the internet in all locations
- Define and test off-line operating procedures at each location

End Users as Risk Factor

In the case of end users of ERP systems, it is necessary to ensure their motivation and quality training. A characteristic of multi-location projects is that there are always a very large number of users who need to be educated almost simultaneously, and during this time these

same users would have to maintain full production efficiency. Literature [4] gives a clear conclusion: users must be able to do new things that they have never done before and not just understand why the change is necessary.

End-user risk in a multi-location implementation has several different dimensions:

- The large number of users to train is a logistical problem in itself: if each site has an average of only five ERP users, a hundred production sites will mean five hundred individuals who must complete training before Go-Live. If training is done too early, users forget what they learned before Go-Live; if it is done too late, users are not sufficiently prepared. Therefore, as a compromise, it is necessary to do the training in two parts, the first part early enough and without stress, and then the second part as a repetition, immediately before Go-Live
- The diversity of user profiles across locations creates a challenge for training differentiation: a warehouse operator needs different training than a production planner or a financial controller. A single, undifferentiated training program will be either too superficial for complex roles or too detailed for operational ones.
- Motivation is not uniform: in locations where the legacy ERP system is considered adequate, users will question why such a major change is necessary, and low motivation directly causes a decrease in the quality of data entry, the acceptance of workarounds, and resistance to process change.

From all of the above, the conclusion is the need to appoint a user education coordinator. He should take care of the entire education process, from creating educational materials, through preparing examples, to organizing the implementation of end-user education by super users. The RACI-X communication matrix is also very useful, where, by means of structurally visible clarity about who is responsible for communicating what to whom [1], conditions are created in which training can be maximally effective: users who understand why the change is happening, who trust the people leading it, and who feel heard are significantly more receptive to training than those who approach the system with scepticism or dissatisfaction.

Risk mitigation measures under the responsibility of change managers:

- Cluster locations and implement a super-user program at key locations: Super-users should receive in-depth training and serve as primary local support resources after Go-Live.
- Use a combined training model with centrally produced conceptual content, central superuser training and regional workshops for end users.
- Treat completion of end-user training as a key issue before Go-Live.
- Extend the change management program for at least three months after Go-Live because monitoring acceptance, additional training and responding to resistance are just as important as before Go-Live.

CHANGE MANAGEMENT IN PROJECT IMPLEMENTATION

Phased Approach

One of the most instructive methodological contributions of the literature [2] is the application of the incremental delivery model to the implementation of additions to an existing ERP system. Instead of attempting a single comprehensive Go-Live of a very complex application, the project was structured in four discrete increments, each culminating in a fully tested mini-application integrated into the existing ERP system. Each increment followed the same multi-part cycle: concept development, application development, ERP configuration, functional testing, integration testing, user acceptance testing, user education, and go-live.

For a multi-location project that takes place within one legal entity, incremental logic can be applied in a way that the implementation is divided into several project phases, where each phase would represent the implementation of certain functionalities at the relevant locations. In this case, in the first phase, the implementation of financial functionalities was carried out in about twenty main locations, and in the second, the main logistics functionalities (sales, production, warehouse operations) with the addition of tracking production costs, in all locations, almost two hundred of them.

Two-tier Structure and Ultimate Clarity of Roles

The governance model described in the case study [1] for a large corporate project offers a directly applicable template for the multi-site context considered here, separating governance at the central from governance at the site level.

At the central level, the change manager is positioned according to the model of direct reporting to the project sponsor. Responsible for change strategy, communication standards within all locations and integrity of change impact assessment. This positioning model gives the change manager freedom of action and access to senior management.

At each location, a local manager is responsible for delivering the implementation. He reports to the Project Manager and Change Manager, handles communication, training and site-specific acceptance monitoring. It is noted in the literature [1] that this positioning has repeatedly proven to be a good choice, ensuring the necessary degree of autonomy of local leaders while maintaining a clear chain of reporting.

Change Impact Assessment

The gap analysis process described in [1] uses interactive guided workshops to compare the current and future state, categorizing each item into one of three options: Fit, Fit with process change, or Gap. In a multi-site ERP implementation, this analysis must be performed at two levels, at the enterprise level, which defines a common ERP template, and at the individual site level, which identifies deviations caused by local specificities, product mix, or operational practices.

The change impact assessment, conducted in multi-day isolated workshops with key participants from central and local operations, produces a structured document that

describes the current and future state of each change item, rates the overall impact as high, medium or low, identifies implementation risks and defines an action plan.

For a multi-site project, the assessment should include representative sites from a stratified sample, selected to represent different geographies and production profiles, rather than attempting to include all sites individually.

Communication

All experience and available literature are unequivocal on this point: communication is a fundamental activity for change management. It is explicitly stated that after all the preparations and draft plans, there is nothing left but to continue communicating. Literature [5, 6] documents a rich set of communication channels: daily and weekly project meetings, daily operational meetings, informative presentations at all levels of the business, all-day isolated workshops with stakeholders, regular field visits to production facilities, mandatory induction hours for new operators, publication of project news in the internal factory newsletter and independent publication of project progress parameters.

In a multi-site ERP implementation, the communication architecture must connect the local experience with the corporate idea, explaining what is changing at the site level and why the organization as a whole is making this investment. Literature [1] demonstrates the motivational power of this framework: employees who understood the existential roles of business transformation were consistently more engaged than those who saw the ERP project as a purely technical exercise.

A reliable example from the literature [1] describes a day-long workshop in isolated conditions with twenty manufacturing experts, in which participants were invited to observe a project from unexpected archetypal roles. The exercise generated concrete suggestions for improving training and communication strategies. Periodic cross-site workshops, which bring together super-users from different locations, can serve a similar function at the project level: building common practices, illuminating common problems, and generating peer-to-peer learning that formal training programs cannot replicate.

End User Education

Literature [1] clearly distinguishes between understanding change and the ability to implement it: it is not enough to simply understand why change is necessary; people must be able to do new things they have never done before, and to do this, they need training. This fact is routinely underestimated in ERP projects, where even communication plans are often much more developed than detailed training plans. Literature [1] demonstrates the value of dedicated, embedded training: a newly hired person with no prior ERP experience became skilled in managing complex logistics processes through full-time collaboration with an experienced ERP consultant. This model cannot be replicated at scale across a large number of locations, but it does point to the importance of the super-user model.

In a multi-location context, training logistics is a project unto itself. A blended approach, combining centrally produced conceptual content, regional process simulation workshops, and on-site super-user coaching for day-to-day operational queries, is really the only model that is both scalable and deep enough to achieve authentic capability transfer.

The role of change manager includes forming the role of training coordinator and providing assistance in planning training programs. However, the most important role of change manager is to ensure that training is not sacrificed under the pressure of the delivery deadline.

FINAL RECOMMENDATIONS

By combining insights from the literature, two case studies, the presented analysis of the seven risk factors, and relevant experience, it is possible to make the following recommendations that summarize the key success factors for a large company implementing a single ERP system simultaneously across more than a hundred production locations:

- Classify the project as chaotic and allocate resources accordingly.
- Appoint a central change manager with direct access to the project sponsor.
- Conduct a rigorous audit of all seven risk factors prior to the start of implementation and assign a dedicated risk owner for each of the seven critical risk factors; treat each risk factor as a separate check point before Go-Live.
- Appoint coordinators for critical areas (master data, testing, education, final preparations).
- Invest in a network of super-users in locations.
- Approach the harmonization of master data in a timely manner; establish a master data team and define data quality acceptance criteria that must be met prior to Go-Live approval for each location.
- Require adequate Internet connectivity at each location, define minimum connectivity standards for Go-Live, and treat non-compliant locations as a separate infrastructure task.
- Define and test off-line operating procedures at each location.
- Organize a trial Go-Live at several locations.
- Manage the psychological transition from multiple local systems to one central
- Design education in such a way that, in addition to the transfer of knowledge, the restoration of self-confidence is also achieved.
- Extend the post-Go-Live support period.

CONCLUSION

The simultaneous implementation of a single integrated ERP system across a large number of geographically dispersed manufacturing locations within a single legal entity, replacing a fragmented structure of local systems, is definitely among the most complex organizational transformations a manufacturing company can undertake. Academic and practical literature on change management leads to a clear message: the technical quality of the implementation is necessary, but not sufficient. The human side of the change, clarity of management, structured analysis, persistent communication and authentic development of

user capabilities, determine whether the system will deliver business outcomes that justify the investment.

This paper extends the existing framework in two important directions. The first is the psychological dimension of ERP implementation: employees who move from familiar, locally customized systems to a single integrated platform experience a genuine loss of professional expertise, a reduction in local autonomy, and an increase in the visibility of performance, which consequently generates anxiety and resistance. These are predictable human responses that must be addressed with the same rigor that is applied to technical configurations and process analysis. The second contribution of this paper is the identification and analysis of seven specific risk factors: ERP system performance, consultant quality, team leadership, master data integrity, product interface stability, internet connectivity, and end-user motivation. Each of these factors requires a dedicated risk mitigation strategy, a designated risk owner, and a set of measurable milestones. Together, they form a risk management framework that complements and facilitates the application of the change management methodology. For a manufacturing company faced with an ERP implementation of such an enormous scale, the investment in change management and risk management infrastructure should not be seen as a cost under any circumstances. Change management is the mechanism by which a large capital investment is transformed into permanent operational capability and by which the workforce is guided to authentic competence in a new way of working. The methodology presented in this paper shows that even the largest changes can be successfully implemented with the concrete support of senior management and a wise change manager.

Wisdom accompanied by intuition proves to be a key element of success in the case of chaotic projects, when it is necessary to ask the right questions, when it is necessary to look for a change in the way of thinking, when it is necessary to focus on simplicity, critical processes and the human factor.

REFERENCES

[1] Nađ, J. (2022) Effective change management for project success. Modern Environmental Science and Engineering, 8(9), 495–502. https://doi.org/10.15341/mese(2333-2581)/09.08.2022/006

[2] Nađ, J. (2022) The role of the ERP system in the rapid increase of production. Trends in Computer Science and Information Technology, 7(3), 099–102. https://dx.doi.org/10.17352/tcsit.000058

[3] Oswald, A., Kohler, J., & Schmidt, R. Project Management at the Edge of Chaos. Springer, 2018

[4] Bradley Stone, K. The Change Agent's Field Guide: Mastering the Intersections of Change Management and Continuous Improvement, Routledge CRC, 2025.

[5] Lovegrove, H. The Change Manager's Handbook. Linchpin Books, 2015.

[6] Smith, R., King, D., Sidhu, R., & Skelsey, D. The Effective Change Manager's Handbook. APMG, 2014.

[7] Shafto, B. How to manage disruptive change. Archway Publishing, 2018.