Technology and Its Impact on Work–Life Integration

Introduction

Technology, either sophisticated or simple, is an intrinsic part of the operational structure of any work environment. Information and information flow provide the glue that holds the structure—physical or virtual—together and facilitates infrastructural decisions. Technology and information strategies are central requirements for service development in the majority of organizations. The implementation of a new information system or the introduction of a revolutionary new technology can transform the competitive or working environment. The use and control of IT provide an opportunity to be innovative when, where, and how we work. These evolutionary trends have impacted variously on the different facets of work–life integration.

Howcroft and Taylor (2014) posited that these innovations in labor utilization and scheduling work impact on employees’ work and how to work are done as the boundaries of the organization “melt” away. Indeed, they argue that society is seeing a new wave of revolutionary technology that provides the platform for significant change in the way we work.
These changes have created renewed interest in how work is conceptualized—what is described as the “smart-side” of technology (Holland and Bardoel 2016). However, these advances in technology can provide an unprecedented level of electronic monitoring and surveillance of work and employees both inside and outside the workplace and have the potential to create “deadly combinations” (Howcroft and Taylor 2014).

The twenty-first century has seen significant expansion in the use and availability of technology, which has created a paradigm shift in the operational flow of most organizations. This shift has affected the different facets of the smart and dark side of technology and how new waves of technology lead to significant changes in the way we work. The tensions between “smart and dark” are examined concerning the use of formal telework practices, a connection between IT systems and work–life balance, the potential of Social Media to fundamentally change the nature and boundaries of voice in the workplace, attitudes toward workplace surveillance, and finally a critical research agenda between the interface of IT and management of human resource in contemporary work environments (Holland and Bardoel 2016).

Technology has evolved to become an intricate part of human beings both at the individual and organizational facets. It has changed the way of life and disrupted the work–life integration of individuals in their workplaces. Technology has not only disrupted the lives of individuals; it has revolutionized the pattern of work–life across all facets of life. The work environment has evolved from being a monolithic world to a global environment where individuals can no longer live discreetly but seamless personal, family, and work lives that are wholly integrated. Technology has been perceived as a vehicle of enslavement to work and subjugation of the nonwork domain to the work environment, another school of thought believes that technology has engendered some measure of flexibility, speed, agility, and innovation across all facets: individual, work, society, community, national, and globally. Whatever angle one considers it from, technology has evolved, influenced, and impacted all aspects of human existence; however, technology connotes different meanings to diverse people. Some consider it an enabler; others see it as an influencer, while others see it as disruptive. Although technology has impacted individuals, family, and work components positively, it
has also, in a subtle way, impacted work–life integration in varying dimensions; this is an aspect that this chapter seeks to explore.

**Meaning and Nature of Technology**

Technology connotes different meanings to different persons under varying circumstances. These connotations each have their implications on individuals, families, communities, nations, and global dimensions. The term “technology” evokes several images, and this general definition refers to know-how that is objectified independently of specific actors; from diverse perspectives, previous research has considered people whose work and nonwork, at the family levels, lives are well-integrated functions effectively at work and home, feel a sense of satisfaction with both domains, and experience minimal conflict levels between work and family (Kossek et al. 2011; Holland and Bardoel 2016; Valcour and Hunter 2005). To this end, ensuing researches on work–life integration have modeled multiple outcomes under the conceptual umbrella of work–life.

Technology is, essentially, an enabler or a facilitator. It makes it possible for new structures, new organizational and geographical arrangements of economic activities, new products, and new processes while not making particular outcomes inevitable. Technological advances such as phones and other personal digital assistants (PDAs), cell phones, and the Internet are among the many forces shaping and redefining work–life boundaries. A school of thought considers technology a “blessing” in disguise, while another school of thought perceives it as a “curse.”

The concept of “domicile as a refuge” has been severely challenged by the increasing encroachment of work-related technology into the home. Advances in technology have expanded opportunities for employees to utilize flexible work options, most notably telecommuting, which has enabled many people to work from their homes’ confines, irrespective of the location and type of business being transacted. This development has not only led to increased intrusion into the nonwork lives of people, thereby impacting negatively on WLI; it has also enabled people to work at any time and in any place and has thus invaded their personal lives.
and, in many cases, turned their homes into “satellite offices, blurring the boundaries between work and home” (Howcroft and Taylor 2014).

An aspect of technology that has impacted individuals, families, and process architecture is the integrational dimension of work and life (this is not clear). In the work environment, organizational employees face challenges of meeting the competing demands of work, social, communal, and family life hinged on the varying assumptions that arise from managing significant issues and family demands as occasioned by inseparable spheres of different facets of life.

According to research (Valcour and Hunter 2005), technology has had different impacts on different aspects of work–life integration; for instance, the use of IT tools has increased the autonomy of organizational employees, work functioning, and associated spillovers from work to family and other areas of individual life spheres. There is a dramatic shift regarding all aspects of human endeavors, encompassing individual and work–life interphase primarily driven by a combination of five digital types of technology: smartphones, cloud services, the Internet of Things (IoT), artificial intelligence (AI), and advanced (autonomous collaborative) robotics that have coevolved toward the creation of an innovative digital platform that has enabled seamless work delivery across private and business domains.

A resultant dramatic effect of this reshaping of work-related behavior and expectations regarding work output and key deliverables from business customers is the attendant incremental flow of information and greater transparency about products and services with a work process flow that entails speedy and more accessible access to work platforms. The evolution of technology provides an unlimited creativity level, whereby unshackling individuals in their work ecosystem from routine and low-value tasks. Another aspect of technology is that it can augment those in their work environments with additional capability, providing them with relevant information and insights toward delivering value from work collaboration as outcomes of the interphase between human and technology. It also enables people in their work environment to focus on the essentials in interpersonal relationships within and outside traditional work domains by eliciting and demonstrating empathy, wisdom, knowledge for informed decision-making, and harnessing work-related
creativity in value delivery to business customers. Disruption in the workplace arising from globalization and technological change impacts individual, communal, and national aggregations with the attendant emerging opportunities and peculiar challenges. This is highly noticeable regarding new technologies and growing levels of digitalization, thus prompting the need for individuals and organizations to adopt and adapt to varying demands from within and without the work environment.

The focus of technology on creating new freedom for when and where people work, in other words, measures flexibility and added value of agility; it also provides the leverage to improve value delivery to business customers because the flexibility platform makes it possible for much work to be achieved. Also, it gives the impetus for workers to actualize their work routine outside their conventional workplace, work hours, and location. These new work archetypes are not just about deriving better efficiency than the traditional location-specific ways of working, but more effective and smarter decisions, creative outcomes, and most importantly, a congenial working environment. Several advantages can allude to the benefits that technology brings to the contemporary working environment. These advantages include new ways of working that engender winning the war for talent enhancement, as good people access solutions and places digitally that would enable them to get stuff done efficiently and effectively. On the other hand, it provides them with some flexibility level that would be valuable to them. Secondly, digital technology is a catalyst for social and business connections. It provides leverage for access to social infrastructure and varying product and service offerings, and it makes coordination possible, a feature unfeasible with analog ecosystems. These energizing new business technological models enable on-demand service and draw on the organization’s availability for working hours. This situation has far-reaching consequences on the work–life of organizational employees. Perhaps, most importantly, these facets of technology accelerate the innovative style of work pattern, which would increase the iteration rate via faster product development and feedback loop mechanism. Aside from these opportunities, digital technology is also facilitating the creation of energizing platforms; this dimension has the potential of expanding new customers and targeting potential customers. The opportunities ensuing
from advancement in technology have reduced the start-up costs for new business ventures with the attendant work platform via cloud services and digital ecosystems.

Additionally, they have enabled new ventures to evolve with new products and services faster, implying that new challenges have been opened by how extraordinarily these technologies have coevolved and aligned to foster new engagement rules spanning from the immediate work environment to the impact at the individual’s private domain. A critical aspect of the leadership capabilities on WLI is the shaping and influence of the organizational culture, which, in turn, affects the work environment. Interchangeably, the workplace culture should elicit the support of legitimate employees’ nonwork role demands and shape the attitudes of managerial and nonmanagerial employees (Batt and Valcour 2003). Thus, an existing technology ecosystem influences leadership capability as the work environment subsists.

As the technology ecosystem evolves, five distinctive leadership capabilities are critical for inclusive integration between work and individual’s life domain (Davies 2019):

1. Audacity
2. Acuity
3. Ambidexterity
4. Agility
5. Adaptability.

**Audacity**

Technological audacity is a digital criterion that is difficult to infuse into a work environment. It is crucial for the successful engagement of individuals regarding their job deliverables in tandem with other facets of their lives. It requires leadership courage at the organizational level and a resilient drive to commit organizational talents. Without this courage and commitment, reallocating business architecture in energizing organizational workforce and talent becomes a challenge and defies existing norms. Thus, organizational leaders spanning supervisory to executive
roles need to walk the talk in harnessing creativity at the individual level without causing misalignment between work and individual work facets. The audacity of leadership function affects technology, thus impacting WLI by stimulating an enabling work environment.

**Acuity**

Acuity is an aspect of technology that incorporates digital leadership capability. It entails looking beyond the boundaries of a business work environment, building insights into how a work environment is evolving, and developing the foresight required to anticipate potential changes. Concretely, it requires a conscious shift in time and attention away from optimizing operational performances in a dynamic core business milieu. It entails shifting focus from business customers and competitors toward building a coherent perspective on innovation, on changes in customers’ preferences and behaviors, and emerging business models within the digital technological framework. Acuity helps in eliciting stress reduction in the work environment, and this directly affects work–life integration.

**Ambidexterity**

Ambidexterity as a digital technology capability entails pulling off the delicate balancing act of making the investments required to explore emerging opportunities to increase and capture new value while simultaneously delivering value from current core business architecture to business customers. This emergent scenario implies that business leaders would have to leverage relentless reinvention and seamless adaptability to a rapidly changing business environment with the attendant work culture and demands. This impact affects the individual’s work demands, and challenges in coping with family and societal expectations, alignment using ambidexterity are also required at the individual and work community. To get this all right, technology would influence organizations in two significant areas: regarding the current technological platform, continuity in cost reduction and increasing revenue and growing demand for organizational product offerings, automation of existing processes
and transformation of customer experience toward attaining customer-centric, continuous, conversational, and customized technological based business entities. In the long run, this would embrace and manage risk and leverage technology digitally in attracting new customers and enabling new business models. Ambidexterity fosters systemic balance as a way of balancing the pull between work demands and personal aspects of organizational employees: this prevents the challenges of work–life integration.

**Agility**

Technological agility is another characteristic of the emerging working environment that impacts individual, societal, and family levels. This has its implications regarding the integration of work and individual lives. The essence of technological agility is increasingly being embraced by incumbent technological natives and new generations of a population. It also entails the ability of the technological framework to adapt and integrate emerging work requirements with modern, different, disruptive, and convergent customer demands. Integration of the disruptive essence of the work environment discourages the challenges of work–life integration.

**Adaptability**

Technological adaptability refers to a situation where a new technological architecture fits individual and organizational work environment. It incorporates changing work expectations, anticipatory customer requirements, and evolving global priorities; it tends to situate organizational versatility, identify new work deliverables, time horizons, and critical competitive priorities within and outside the individual work environment. This is important as an aspect of work–life integration. In an evolving digital ecosystem with evolving work imperatives, there is a need to reshape the work environment not merely to survive the odds but to drive radical innovations in a bid to reshape and re-enact the new work
rule with its attendant implications. Adaptability at the individual and organizational levels inhibits the challenges of work–life integration.

**Types of Technological Change Affecting the Management of WLI**

According to Dicken (2015), there are four broad types of technological change that have progressively made significant and far-reaching impacts on several areas of work–life integration viz:

1. **Incremental Innovations**: These are technological innovations encompassing small-scale, progressive modifications of existing products and processes, created via “learning by doing” and “learning by using.” This type of innovative drive is hinged on already existent products and processing from a small-scale perspective. The incremental nature of this innovation necessitates a push on the work environment that generates demand on time and attendant motivational stress to provide the service offering or product in question. The implication of this situation is the manifestation of the tandem impact of work–life integration.

2. **Radical Innovations**: As the name connotes, this type of innovation entails radical aspects of innovation that are leveraged radically; they are the discontinuous and discrete innovative archetypes that drastically change existing products or processes. It does not engender change on a widespread basis, but spews change at a cluster level. The radical nature of this innovation warrants a drastic change within a paradigm continuum that demands pull on organizational resources inclusive of time and motivational stress. This situation may result in an imbalance that may impact the WLI of individuals and groups in a corporate work environment. Organizations are increasingly innovating radically and tapping from organizations within and outside their value chains (Oke 2019). This systemic pull implies a demand on time resources and individual capability, which ultimately impacts WLI.
3. Changes in technological systems: This is an aspect of technological architecture that impacts existing business ecosystems and stimulates new opportunities. This type of innovation embodies radical and incremental technological innovations in tandem with relevant organizational innovations associated with the emergence of vital generic technologies. A systemic change impacts both process flow, recourse (inclusive of time), and organizational employees at individual and group levels. Since it embodies both radical and incremental aspects of innovation, it automatically encroaches into work and private life components of individuals and groups in the work environment.

4. Changes in the techno-economic paradigm: This type of innovation involves a revolutionary change as a function of new evolving technological architecture. A characteristic of this type of innovation is that the pace of change is slow and takes time to actualize since it requires a combination of social, organizational, and technical aspects.

An aspect of this change is the gradual impact on work design that has enabled the deployment of multifaceted technological tools such as telecommuting. It has also enabled the flow of work to invade or spillover into the home (Valcour and Hunter 2005). However, from the productivity perspectives, the drive for outcomes and deliverables rather than hours clocked and physical presence in the work environment has generated different work–life needs and difficulty getting a flexi-time block to attend to family and personal issues (Liu 2016; Ogah 2018). Accordingly, an organization can improve the organizational work environment via innovative and robust engagement of employees, especially in developing economies (Ogah 2018). This would help alleviate work–life integration challenges.

Improvement in technology architecture has a dual impact on value delivery and attempts to provide employees with the support they need to ensure a healthy work environment. Advancement in technology has raised expectations for both employees and employers to achieve goals and objectives and meet often unreasonable deadlines that increase pressure on other employees within the organization. This may affect employees’ health, resulting in higher absenteeism, lower productivity, and higher turnover rates. New technology has provided more flexible
work practices but has also increased the speed at which information is shared and the expectation for responses, action, and decision-making. Hours of work extend beyond the average daily hours regardless of being able to adjust the hours within the 24 hours. This has generally been found to impact work–life balance negatively. Importantly, there is a potential for greater global telework access, which can deliver “smart” outcomes, such as higher productivity, commitment, engagement, productivity, and better work–life balance for multiple stakeholders. However, on the flip side, it is also essential to recognize the challenges of telework management to avoid the “dark” side, such as a loss of social cohesion and information and knowledge transfer (e.g., when individualism values dominate) and a loss of work motivation and engagement (e.g., when collectivism values dominate).

Although technology is the leverage for workplace revolution, it affects the human workforce that would engender the required transformation despite ample opportunities that exist in it in an emerging digital age. Concurrently, the rest of the population resident in the workplace may be challenged to adapt to evolving automation with attendant new skill requirements. This emergent attribute may pose a challenge in the immediate workplace and constitute a spillover to the workforce’s life outside the immediate work environment: here lie the inherent dimensions of WLI. A significant consequence of this aspect of the workplace is that organizations must help workers embrace change and adapt and leverage new opportunities to thrive in a digitally challenged world. A critical discourse of this implication is that a large segment of our population may find themselves stuck and confronted with irrelevant skills and long-term unemployment, leading to poor socioeconomic work-related outcomes. This would ultimately lead to many employers struggling to prepare their workforce for new work routines and spillover to their private living space toward ensuring the freed capacity from workplace redundancy geared toward optimal productivity and maintenance of full employment. Some aspects that would impact on WLI include:

1. Automation being used selectively to drive only efficiency.
2. A lack of clarity as to the extent to which roles and tasks are being impacted by automation.
Technology has influenced the distribution of jobs across industries, occupations, and supervisory span of managers and supervisors, which has directly impacted WLI, as shown in Fig. 4.1. In varying ways, technology has affected work–life integration via the distribution of jobs at industrial, occupational, and managerial span levels.

Another essential shift driven by technological advances is the increasing share of people employed as managers and professionals. The increase in the percentage of workers with supervisory responsibility or professional standing suggests a concomitant increase in the autonomy and discretion enjoyed by workers, and research has established that job autonomy is associated with increased opportunity to exercise control over the relationship between work and nonwork domains with low work–family conflict.

To this end, technology influences the overall mix of jobs, and because jobs in themselves differ in how they influence the relationships between work and life outside of work, technology affects work–life conflict, as depicted in Fig. 4.2. Technological change matters at the aggregate level. As it creates some kinds of jobs and destroys others, the overall state of the relationship between work and life outside work also changes. In addition to reducing autonomy, technology can also place workers under closer managerial scrutiny by facilitating extensive monitoring of employees’ work. Sophisticated computer systems are replacing mechanical time clocks and are extending managers’ ability to track when
employees start and stop—a capacity previously applied primarily to nonmanagerial employees, but that can now be applied to more highly skilled workers. Modern technology does more than automate tasks: it provides supporting tools for nonroutine activities that require high levels of skill and worker engagement (Holland and Bardoel 2016). Software applications such as spreadsheets, word processing, and sales-support technologies automate sets of tasks ranging from the routine to the very complex, providing workers with the means to do higher level activities more efficiently.

The elimination of redundancy in processes means that every worker’s role may be vital; the leaner the process, the more tightly linked its steps, the more difficult it is for workers to exercise the sorts of discretion that would steal their focus from their work tasks. In terms of its contemporary impact on WLI, the most fundamental and prevalent change brought on by advances in information technology is arguably the redistribution of work across time and space. Such redistribution is not entirely distinct from changes in the mix of industries and workplace
technologies described earlier. New technologies allowed firms to gather workers together in factories in the nineteenth century. Today, the latest advances allow firms to disperse workers to do jobs such as consulting that barely existed half a century ago.

**Features of Technological Impact on Work–Life Integration**

Teleworking is associated with increased permeability of the boundary between work and nonwork domains. The spatial, temporal, social, and psychological aspects of the work–nonwork boundary are all affected by the movement of work demands into the home. Whereas the social roles people occupy at work and family had generally been separated in industrial societies, telecommuting causes these roles to overlap. Finally, the movement from home to work, and vice versa, involves crossing a psychological boundary, an aspect that is also changed when people work at home.

Evidence on the impact of technology and telecommuting on aspects of WLI is equivocal. Generally, research suggests that the use of portable information and communication technologies is associated with increased adverse spillovers from work to family, even when controlling for occupation, work hours, and commuting time.

The search for a technological solution to enhance work–life integration is, however, not the only force underlying the implementation of teleworking technology. By the 1990s, more kinds of teleworkers emerged, and several organizational rationales for teleworking were offered, including reduction of real estate and labor costs, efforts to increase productivity, customer proximity, complementarily with the required mobility of many client-focused workers, and compliance with regulations.
Factors Influencing the Relationship Between Technology and Work–Life Integration

Organizations should create technology-based infrastructures and tools to activate varied technological experiences, tailored to suit both individuals and evolving work teams, and designed to influence engagement, adoption, and productivity. These types of team architectures should operate across multiple dimensions to inform and feed all complementary work functions. A priority aims at developing an integrated understanding and related plans that connect people and technology. However, many business configurations are already imbibing the dynamic rate of technology adoption as a measure of outpacing the ability of organizations and the adaptability of people.

Aside from this direct influence induced by technology, a relational factor is the lack of flexibility in workplace timing. Working in a physical space is a limitation, but technology might be a constraint in mitigating the impact regarding a virtual space. On the flip side, technology gives unrestrained room for persons to encroach on their private spaces due to work demands; this situation impacts negatively on work–life integration.

Working in a virtual space gives leverage to persons coping with excessive time and work demands. The use of technology gives ample space for some multitasking in the physical workspace. However, these advantages have their downsides since they encroach into the private lives of individuals and families and impact negatively on the work–life integration component.

In work situations where supervisors are not providing support for their direct reports, the presence of technology may not mitigate this situation but rather exacerbate it. Thus, the redesign of the work structure may not even be useful in this instance.

Factors affecting the impact of WLI can be explored within three-dimensional aspects (Valcour and Hunter 2005).
**Micro**

Micro-level impact on WLI has two main dimensions: individual and family. These dimensions have a direct effect not only on the work environment but also on the societal ecosystem at large. However, different work demands may influence the manner and extent of the impact of technology on the integration of the various components of private, family, and society. Incidents of imbalance of integration between the individual, personal, work, and society abound in different work ecosystems. A manifestation of these disconnections exemplifies various forms and shapes in a work environment, family, communities, and nations. These scenarios, though unique in some instances, are widespread in developed economies than in emerging ones. Some relate to different categories, such as gender, parental status, marital status, and personality.

**Meso**

Individuals do not exist in isolation but coexist with other significant others in any subsisting ecosystem. The meso-level depicts the effects and levels at which individuals interact with one another. The type and extent of interaction depend on the nature of interest, goal, and urgency; however, the most common type of interaction pertaining to the meso-level exists in organizations as required by work rules and demands. This interaction is typical of organizational and sub-organizational work enclaves such as division, department, and work units. As exemplars of these factors, we consider the roles that may be played by organizational policies and culture regarding work and family, the effects of supervisor support, and the demands that workplace practices and strategies place on coordination. Most challenges of WLI abound at this level.

**Macro**

Interactions that subsist at the meso-level gradually grow to an enormous scope of interaction referred to as macro-level. This type of
interaction governs workplace architecture and largely influences the relationship between configurations of workplace technology and work–life. Examples of these include regulatory, occupational, and class hegemony.

The emerging dimension of this macro-level interaction is globalization. Globalization is an interaction that entails a process flow by which countries cohabit by trade, capital flows, and technology. It impacts job content, work communities, and consumption patterns, which influences the work–life integration between the microcosm of individuals in business communities and nations. A related consequence of this imbalance, as a fallout of the disconnect in the work–life integration, is a sustainability impact on the environment, people, and broader ecosystem.

**Technology-Specific to Service-Oriented and Non-service-Oriented Work Environments**

**Service-Oriented Work Environment**

A service work environment has its unique technological characteristics. This type of technological architecture rarely invokes a single dominant feature due to the nature of service delivery value flow. Investment in information systems is likely to be the significant expenditure for many service organizations, both at the initial setup of the operation and at frequent intervals as the industry moves forward and adopts similar technologies. Some services are built on the provision of information. In terms of the service concept, the outcome is that the user is provided with details of where to buy particular goods or obtain service. Technology has influenced service delivery in varying roles encompassing multiple knowledge bases, service streamlining, customizing, and personalizing service, increasing reliability, facilitating communications, cost reduction, and total customer control. This situation is donated by the characteristics of the service work environment as enumerated below.
Characteristics of a Service-Based Work Environment

Researchers and analysts have used the following criteria to characterize services, although not all services exhibit these characteristics (Johnson et al. 2012). However, most manifest these characteristics:

**Intangibility**

Intangibility is an aspect of a service-based organization that entails delivering value to business customers, which cannot be captured concretely. One of the challenges of this situation is that there is no delineated boundary between the envisaged customer experience and the expected outcome flow from the reference value chain of the organization in question. This relationship implies difficult work–life integration.

**Lack of Ownership**

Both organizational employees and customers value creation in the service-based work environment as a requisite of the value chain. This aspect implies that it makes varying demands on the organization’s private and work–life dimensions, indirectly impacting work–life integration.

**Inseparability**

The delivery of value to business customers and the life segment of employees in service-oriented work environments are inseparable because of the uncontrolled overlap existing between these different dimensions of work–life components. In advanced economies, this poses a major occupational challenge but less of a challenge in developing economies where technological advancement is still incipient.
Perishability

A service work environment delivers value that is consumed in situ by the output recipients. This attribute makes increasing demand on the employees in this type of work environment. The resultant effect is that work–life integration becomes a challenge both at the individual and societal ecosystems.

Variability

A service work environment is configured by default to spew out variable outcomes in response to the varying demands of customers. The implication of this is that employees in this type of work situation must incrementally upscale their capabilities to reclaim relevance; this is having its downside on work–life integration.

Operational Challenges

The critical lesson for leaders and employees in a service work environment is to recognize that service concepts are changing rapidly, and new service providers may be providing better value for customers by taking advantage of changes in networks, information, and technology. More positively, there are many possibilities to provide better service at lower costs by integrating services and information provision and harnessing the power of intelligence networks. The pace of change offers both opportunities and challenges of service to the operations manager. These include the need for:

1. Investments in future-proof technologies
2. Sophisticated but reliable technology
3. Extensive, reliable, and up-to-date database
4. More centralized operations
5. Technology-competent staff
6. Involving users in the development of “unknown services.”
The aspects mentioned earlier distill a personal relationship with the customer despite limited personal interaction. Some information-based organizations see opportunities for developing advanced services following, for example, the creation of databases based on the original service. In such cases, the potential rate of innovation might be relatively rapid, thus presenting significant challenges for the operations manager.

**Flexing the Structure of the Work Environment**

In the past, the structure of operation acted as a constraint to operations. Today, using technology, information, and the creation of global, physical, and virtual networks, constraints can be removed, and new services and operations capabilities created. The usual way of describing the two main clusters of operational tasks is those decisions concerned with managing the operation’s structure and infrastructure. The structure of an operation is akin to a human body—it has the skeleton, organs, and muscle structure, which create its shape and define its ability. For an operation, the structure includes the technology, facilities, buildings and their locations, and the supply network. These hard-structural parts of an organization define its overall shape and architecture, and in the past, have constrained its abilities. A restaurant with only 30 seats, for example, constrains its activities, just as the capacity of a telecommunications device, measured in kilobits, may constrain the type and speed of information flows. Structural decisions include the location, capacity (size), capability, and the resilience or flexibility of the various physical or virtual parts of the operation.

On the other hand, an organization’s infrastructure comprises the decisions that affect how the structure is used—the organization, planning, control, and improvement of its processes, staff, and customers, for example—and decisions about how performance is measured and improved. Many operations decision-making has taken structure as given, or at least as a costly resource. This means that operations managers have concentrated on infrastructural decisions, such as process design, people management, and resource allocation. Today operations
structures are much more fluid through the use of networks, technology, and information, and they can provide the key to new services and new levels of productivity and customer service. There are two aspects for operations managers to consider here:

**Managing Physical and Virtual Networks**

Some individuals prefer the physical to the virtual workspace. The former encourages closer and personal contact; it drives a greater level of collaboration and essence of being, whether in periods of urgent or regular flow of value to the business customer. There has been a paradigm shift in how work–life is structured in the physical space vis-à-vis the virtual network, while due to an emerging disruptive situation as occasioned by an evolving instance of COVID pandemic. However, managing teams in a virtual environment is more demanding than in a physical environment, though there is more flexibility in the virtual space. Nevertheless, getting work done or meeting work deliverables in a virtual space encourages work–life integration than in a physical space. In developed economies, working in the virtual workspace gives more room for integrating private life with work demands, while in developing economies, there is a challenge in working virtually due to the unavailability of internet connectivity and other related constraints.

**Managing Technology and Information Flows**

Leveraging knowledge about customers. Information systems that ensure that customer-facing employees have all relevant information about the customer during the service transaction present a more professional image and allow the core transaction to be conducted more efficiently. When First Direct, the telephone banking service, was conceived, a fundamental requirement was for an information system that allowed any customer to talk to any service employee at a time. Some hotels keep comprehensive records of regular guests’ likes and dislikes, preferred rooms, and dietary requirements. At a simple but effective level, an airport hotel courtesy bus radios ahead for customers on board so that
they can be greeted by name at arrival. This latter example demonstrates that technology does not need to be complicated or expensive to impact significantly.

Leveraging knowledge of the service product. Service organizations that are moving away from offering a standard service may need upskill customer-facing staff. A more excellent choice for customers may require greater knowledge about the product to give appropriate advice. Information systems may allow the customer-facing employees to act “as if” they were experts. Again, these systems vary from too complicated to very simple. At one end of the scale, an expert system may harness all the knowledge of recognized experts and specialists. On the other extreme, a simple checklist on a computer screen may deal with many customer inquiries without the need to refer to expensive technical help. Many computer or software helplines operate on this principle, with on-screen diagnostic routines to aid the customer service agents.

Multiplying knowledge of customers’ use of the product. This is an extension of the previous use of technology and constitutes a change in service concept typically. Instead of merely selling a product, the service provider seeks to understand how the customer uses it and aids or advises on using it more effectively. Truck manufacturers, faced with increased competition, moved the emphasis of their aftermarket operations away from merely selling spares to truck operators. To develop customer loyalty, they invested in understanding how truck operators might manage their fleets more profitably. This knowledge was then disseminated through the manufacturers’ networks utilizing an information system, rather than positioning a fleet profitability expert in each location.

Integrated Information Provision

Information technology, coupled with technologies such as satellite tracking, has enabled operation managers to make decisions based on more complete and real-time information. An obvious example is the parcel business. Both managers and customers can track the location of parcels sent by the courier. Information technology has transferred
from our computer at work, we can order our stationery and computer peripherals, changing the role of the traditional purchasing department. From our home computers, we can order our weekly groceries or train tickets or cinema tickets or move money between bank account or pay bills.

**Non-service-Oriented Work Environment**

In particular jobs, technology influences work–family integration by shaping the tasks that workers perform. An assembly line under mass production, for example, permits workers little control over the content of their work, its pace, or the order in which they do specific tasks. Automation may therefore raise obstacles to effective work–life integration, and such effects are not limited to manufacturing assembly lines.

Technological advances, rather than reducing employment to a sideshow, seem to be associated with an intensification of work. This dynamism has remained unchanged both within and without the traditional workspace. Moreover, the emerging work, the decline in the share of workers employed in manufacturing, and concomitant increases in service-sector employment suggest that workers have moved into jobs that—in some instances—permit more freedom of movement and communication outside the workplace, allow more flexible scheduling, and provide other opportunities to achieve effective integration between work and the rest of life.

The contextualist perspective on the organization of work raises two critical issues for work–life integration. The first is the extent to which different configurations of technology in use influence workers’ abilities to balance their work responsibilities with their lives outside of work. Our review suggests that effects may be associated with the extent to which workers enjoy task discretion, that technology is used to facilitate flexible rather than constraining work schedules, and that monitoring is used to limit workers’ behaviors. A second issue is an extent to which work–life integration is a consideration, explicitly or implicitly, in
managerial decisions about technological implementation or in workers’ responses to these decisions.

In some instances, workplace culture, in general, must support and legitimize employees’ nonwork role demands. This environment shapes the attitudes of managerial as well as nonmanagerial employees. The organization must also create an environment that recognizes variation in the work–life interface of employees over their life course. The relationships that subsist between work–life integration and other dimensions of work design are more ambiguous. Globally, organizations have increasingly adopted more collaborative or team-based forms of work organization to improve workplace quality, efficiency, and coordination, which has fostered work–life integration. Although there is a school of thought that supports the idea that team collaboration and coordination improve organizational performance, there is little research on how these forms of work organization affect employees’ ability to manage work and family.

On the one hand, the ability to collaborate or coordinate work with other colleagues may increase flexibility if coworkers can substitute for one another or establish norms of reciprocity in which they agree to help one another meet work and nonwork demands. Some studies have found positive effects of team-based systems on work–life outcomes. Still, on the flip side, the demands of collaboration and group coordination may increase work hours or the rigidity of work if they lead to time-consuming meetings or heightened peer-group pressure. The use of information technology is another area of work design that is rapidly changing, and the nature of its impact on WLI is also unclear. Portable computers, faxes, voice mail, and email allow workers to bring work into the home more efficiently but may have effects similar to those of telecommuting. Researchers have found very mixed outcomes for telecommuting because, although it increases flexibility, it also allows work to invade or spill over into the home.

Employees tend to experience work–family conflict when demands from work and family are high and difficult to satisfy. A work–family conflict is an integral conflict in which incompatible demands emanating from work and family domains make it difficult or impossible to satisfy both sets. Employees from dual-earner families are particularly likely to
experience conflict between work and family. Whereas most research has focused on individuals and the work–family conflict they report, a growing number of studies suggest that work–life issues must be understood in the context of both spouses’ employment conditions. The paradigm shift is to focus on ways in which technology affects work–life integration, “a perceptual phenomenon characterized by a sense of having achieved a satisfactory resolution of the multiple demands” of work and nonwork domains.

Employees have traditionally faced the challenge of meeting the competing demands of work and family life with the assumption that they were solely responsible for managing their balancing acts and could not expect significant assistance from their employers in this regard. Both employers and employees often treated work and family domains as separate spheres of existence.

The term “technology” evokes several images. It’s most general definition refers to know-how that is objectified independently of specific actors. In this chapter, we explicitly focus on technology as embodied in machines and, to a lesser extent, work processes (we consider organizational practices as separate from this “hard” definition). We give much of our attention to recent advances, focusing mainly on information technology (IT)—hardware, software, and telecommunication. Our framework also allows us to consider technology from a historical perspective and frame our claims more generally. People whose work and nonwork (mostly family) lives are well-integrated function effectively at work and home, feel a sense of satisfaction with both domains, and experience minimal conflict levels between work and family. As this definition suggests, work–life integration is a multifaceted construct. Researchers interested in work–life integration have modeled multiple outcomes under the conceptual umbrella of work–life.

**Technology Impact on WLI: Implications for Africa**

Research done among manufacturing organizations in Nigeria, Africa, indicated that an organizational work environment could be improved using emerging innovation and robust employee engagement (Ogah
An emerging aspect of innovation has been witnessed and is occasioned by technological digitization in most businesses across Africa, especially in recent times. Previous research works (Epie 2006; Fapohunda 2014; Obamiro et al. 2016), have also revealed that inadequate infrastructural frameworks and growing incidents of job scarcity are some factors aside leadership challenges that have affected the link between work and life components in some Africa countries. The distortion inherent in this link has also impacted somewhat on work–life integration in these climes. However, with the emergent opportunities and flexibility as enabled by technology in the digitization of most work environments in Africa, the advantages outweigh the disadvantages in many aspects in the long run as it were. However, a dark side of technology is the stress created in Africa due to the ineffective technology arising from lack of infrastructure. For example, during COVID-19 many businesses in Africa began to work remotely and studies found out that poor infrastructure such as poor power supply limited the effectiveness of internet required for remote work and caused high work stress in employees (see Chawla et al. 2020; Falokun 2020; Mulley-Goodbarne 2020).

Albeit several models based on role, ecological systems, and conservation of resources (COR) theories espousing the limitation of resources, the interaction between the individual and the several systems surrounding the individual, and work–home resources respectively have been used to explore the various aspects of work–life integration (Brummelhuis and Bakker 2012). However, COR theory seems to exemplify and amplify most dimensions of work–life integration in Africa since it subscribes to how people react to stressors in their environment and how these encounters influence and define their well-being.

Conclusion

Technology has not only impacted work–life integration but has also influenced how employees function in their respective organizations irrespective of the type of organization—whether service-based, manufacturing-based, or hybrid. This inherent attribute has made it
possible not only for individuals to function more productively in their workplaces but for technology to encroach into their individual and private lives. Aside from the benefits of multi-tasking and the enhanced capability to achieve more work deliverables, technology has reduced the quantum of quality time that individuals can access due mainly to the pervasive drive to use ample leverage that technology provides to work from the confines of their home. As enabled by technology, this flexibility has not only influenced work–life integration somewhat positively or negatively but has also affected it from all perspectives and dimensions, as it were. Albeit this may continue for the time being as unique people grapple with this evolving aspect of their lives amidst other competing issues emanating from the personal, communal, and global dimensions.

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