Influential Article Review - Uncovering the Digital Organization

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This paper examines technology. We present insights from a highly influential paper. Here are the highlights from this paper: Increasingly, organizations are assessing their opportunities, developing and delivering products and services, and interacting with customers and other stakeholders digitally. Mobile computing, social media, and big data are the drivers of the future workplace, and these and other digitally based technologies are having large economic and social impacts, including increased competition and collaboration, the disruption of many industries, and pressure being put on organizations to develop new capabilities and transform their cultures. In this article, we provide a conceptual framework for the design of effective digital organizations. Our framework is predicated on the current state of digitization across diverse sectors of the global economy. In the digital world, all activities and transactions leave digital marks, and all actors, things, and places can be reached and affected digitally. As a result, we can design for self-organization rather than using hierarchical mechanisms for control and coordination. Such designs require the strategic and cultural alignment of digital technologies within the organization and externally with stakeholders. We propose that "actor-oriented" principles are at the heart of designing digital organizations and that, if properly applied, can result in a workplace where organization members are highly engaged and productive. For our overseas readers, we then present the insights from this paper in Spanish, French, Portuguese, and German.

Keywords: Digital technology, Digital organization, Digital disruption, New organizational forms, Organizational architecture, Workplace of the future, Collaboration tools

SUMMARY

- Traditional organization design is centered on structural relationships – the boxes on the organization chart and the reporting lines that connect them.
- Collaborating, self-organizing actors. A competent actor is one who possesses the knowledge, skills, and values suited to an actor-oriented system. In building a digital organization, the effective composition and mobilization of a set of competent actors may require a combination of selection, training, mentoring, and replacement of personnel. An actor-oriented digital organization is especially conducive to use by millennials who have acquired knowledge and expertise from their Internet activities , and it may be difficult to use by employees who lack social media skills and who have been ingrained with hierarchical approaches to organizing and managing .

- In 2015, millenials became the largest generation in the U.S. workforce, and by 2025 they will constitute 75% of that workforce . A forecasted skill set for the digital-age workforce is shown in Table 4. As shown, the digital organization will require its members to have a demanding set of both hard and soft skills. Hard skills include computational thinking and trans-disciplinarity. Soft skills include social intelligence, cross-cultural competency, and the ability to collaborate.
- Commons that support collaboration. Designing commons for a digital organization will be specific to each organization and its needs, but two commons in particular deserve attention: situation awareness and knowledge. To be effective, actors need a shared awareness of the resources and activities in their environment. For example, in the self-dialysis clinic at the Ryhov Hospital in Sweden, all dialysis patients share a common electronic calendar that allows them to schedule their own treatment sessions. In addition, the equipment of the center is designed in a way that allows patients to perform their own treatment. The roles of the actors in this example are different from those of a hierarchically organized treatment center.
- Guiding interactions among actors and accessing commons require protocols that reduce ambiguity and increase the effectiveness and efficiency of interaction. There are self-organizing processes associated with each protocol that actors follow in order to achieve control and coordination.

HIGHLY INFLUENTIAL ARTICLE

We used the following article as a basis of our evaluation:

Snow, C. C., Fjeldstad, Ø. D., & Langer, A. M. (2017). Designing the digital organization. Journal of Organization Design, 6(1), 1–13.

This is the link to the publisher's website:
https://jorgdesign.springeropen.com/articles/10.1186/s41469-017-0017-y

INTRODUCTION

Digital technologies are transforming the global economy. In his pioneering book Being Digital (1995), technology futurist Nicholas Negroponte (1995), described how the old industrial economy would be eaten away by a new digital economy. Moreover, digital technology makes it possible for members of an organization to self-organize and thereby avoid the delays, distortions, and other damaging effects of hierarchically organized systems (Benkler, 2002). Established companies recognize that digital technologies can help them operate their businesses with greater speed and lower costs and, in many cases, offer their customers opportunities to co-design and co-produce products and services (Sambamurthy et al. 2003). Many start-up companies use digital technologies to develop new products and business models that disrupt the present way of doing business and take customers away from firms that cannot change and adapt.

Software tools and applications, robots, and a host of other digital technologies "… are doing for mental power – the ability to use our brains to understand and shape our environments – what the steam engine and its descendants did for muscle power" (Brynjolfsson & McAfee, 2014: 7–8). Properly harnessed, digital technology can enable individuals, firms, cities, and governments to become smarter – to expand their capabilities and to adapt to new and changing conditions. As an agile organizational form (Alberts, 2007), the digital organization will be populated with individuals and teams who are facile with technology and who can collaborate both inside and outside the organization to make process improvements and develop new solutions.

In our article, we offer organizational designers, change agents, and managers a conceptual framework for the design of a digital organization – identifying its major components and showing how they should be put together. A fully digital enterprise is a powerful combination of people, technology, and organizing ability that is well suited to today's economic and social environment. In the first section, we discuss how

digital technologies are used by organizations to increase their efficiency and effectiveness. Digital technologies augment and support work activities and decision-making, connect members of the organization, and aid in managing relationships with customers, suppliers, and other stakeholders. In the second section, we describe the organizational architecture that is appropriate for a knowledge-intensive, highly collaborative digital organization. This architecture is "actor" oriented – that is, it places a premium on the ability of organization members to self-organize while performing their work tasks. Actor-oriented organizations mostly rely on protocols, commons, and infrastructures to maintain control and coordination instead of hierarchical mechanisms. In the final section, we discuss how to apply the actor-oriented architecture for those organizations wanting to develop their digitally based capabilities. Here we address the skills and motivation of actors, the creation of commons that support their work activities, and the protocols and infrastructures that connect actors and facilitate their interactions.

CONCLUSION

Digital organizations are increasing in both numbers and sophistication. We have described how digital technologies can be integrated into organizations and have shown how actor-oriented principles and designs can be used to organize and perform activities. Actor-oriented digital organizations are collaborative, agile, and minimally hierarchical. In many industries, they are populated by human and digital agents who work together collaboratively. Digital organizations need technologically aware and adept leaders who can set the digital agenda and create the context for the digitization of every relevant aspect of their organizations. Digitization is occurring at an accelerating pace; successful leaders need to synchronize their organizations to digital clock speed.

APPENDIX

TABLE 1
DIGITAL APPLICATIONS USED IN LEADING DIGITAL FIRMS

Target area	Goal	Leading digital firms and their industries
Customer experiences	Customer co-creation of products and services Customer engagement and loyalty Customized offerings	Burberry (clothing) Starbucks (specialty retailing) Caesars (gambling and entertainment)
Internal operations	Increased efficiency Lower costs Greater speed Higher quality	Asian Paints (paint and adhesives) Codelco (mining)
Business models	Reinventing industries Substituting products or services Creating new digital businesses Reconfiguring value delivery models Rethinking value propositions Market design	Airbnb (private lodging) Uber (taxi services) Amazon (online retailing) UPS (logistics services)
Product design and development	Intelligent product design User-driven innovation	Fujitsu (electronics) Nike (athletic shoes and apparel) Lego (toys)
Organizing	Agile organizations Collaborative processes Non-hierarchical means of control and coordination	IBM (technology and consulting) Accenture (professional services) NATO military forces (national defense)

Source: Adapted from Westerman et al. (2014)

TABLE 2
ELEMENTS OF AN ACTOR-ORIENTED ORGANIZATION

Element	Function	Examples
Actors	Perform work activities by self-organizing and collaborating	Individuals or teams in an organization Firms in a collaborative community Citizens, firms, and municipal agencies in a smart city
Commons	Shared resources made available to actors to support their work	Shared knowledge Shared databases Shared situation awareness
Protocols, processes, and infrastructures	Infrastructures connect actors with one another Protocols guide actor behavior Processes that combine to create an agile organization	Software apps that announce projects as well as the availability and expertise of actors Shared norms and values concerning how actors should behave Intra- and inter-organizational collaboration

TABLE 3
ANTS FORAGING FOR FOOD

A queen ant lays the eggs that establishes the colony. She gives the ants their innate characteristics but does not directly control and coordinate what they do. Worker ants operate according to a set of processes and communication protocols that enable them to self-organize their work. For instance, when an ant finds food, it releases pheromones on the way back to the nest. The scent is a signal that mobilizes other worker ants to follow the chemical traces to the food source. They then collect and transport food in efficient columns back to the nest until the food source is empty. When there is no more food to collect, the ants stop releasing pheromones as they return to the nest. The scent weakens, and the ants start exploring new terrain to find more food.
This example includes the core elements of the actor-oriented architecture. The *actors* in the ant organization are the queen, workers, drones, and soldiers (Buckingham, 1911; Gordon, 2014), all of whom have different *capabilities*. The queen is the one who starts the colony and lays all the eggs. Drones are male ants who do not perform any work in the colony; their sole function is to fertilize a new queen. Soldier ants defend the nest. Worker ants perform a variety of tasks including nest building and maintenance as well as food foraging, and they coordinate by using pheromones as communication *protocols*. In food foraging, the worker ants search randomly for food in the absence of a nearby pheromone trail, drop pheromones on the way back to the nest while carrying food, and follow a pheromone trail to a food source. Thus, pheromone trails provide the ants with a *shared situation awareness* of food sources. The worker ants each contribute to updating the situation awareness, and they all use this *commons* to determine their own behavior. Updating and using the pheromone trail for navigation is part of the ants' collaborative capabilities.

TABLE 4
WORK SKILLS REQUIRED BY AN ACTOR-ORIENTED DIGITAL ORGANIZATION

Sense-making
Ability to determine the deeper meaning or significance of what is being expressed
Social Intelligence
Ability to connect to others in a deep and direct way, to sense and stimulate reactions and desired interactions
Cross-cultural Competency
Ability to operate in different cultural settings
Computational Thinking
Ability to translate large amounts of data into abstract concepts and to understand data-based reasoning
Media Literacy
Ability to critically assess and develop content that uses new media forms and to leverage these media for persuasive communication
Trans-disciplinarity
Literacy in and ability to understand concepts across multiple disciplines
Design Mindset
Ability to represent and develop tasks and work processes for desired outcomes
Cognitive Load Management
Ability to discriminate and filter information for importance, and to understand how to maximize cognitive functioning using a variety of tools and techniques
Virtual Collaboration
Ability to work productively, drive engagement, and contribute as a member of a virtual team
Source: https://www.sfu.ca/career/WCID/iftf_futureworkskills.html

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TRANSLATED VERSION: SPANISH

Below is a rough translation of the insights presented above. This was done to give a general understanding of the ideas presented in the paper. Please excuse any grammatical mistakes and do not hold the original authors responsible for these mistakes.

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A continuación se muestra una traducción aproximada de las ideas presentadas anteriormente. Esto se hizo para dar una comprensión general de las ideas presentadas en el documento. Por favor, disculpe cualquier error gramatical y no responsabilite a los autores originales de estos errores.

INTRODUCCIÓN

Las tecnologías digitales están transformando la economía global. En su libro pionero Being Digital (1995), el futurista de tecnología Nicholas Negroponte (1995), describió cómo la vieja economía industrial sería devorada por una nueva economía digital. Además, la tecnología digital permite a los miembros de una organización autoorganizarse y evitar así los retrasos, distorsiones y otros efectos perjudiciales de los sistemas organizados jerárquicamente (Benkler, 2002). Las empresas establecidas reconocen que las tecnologías digitales pueden ayudarles a operar sus negocios con mayor velocidad y menores costos y, en muchos casos, ofrecen a sus clientes oportunidades para co-diseñar y coproducer productos y servicios (Sambamurthy et al. 2003). Muchas empresas emergentes utilizan tecnologías digitales para desarrollar nuevos productos y modelos de negocio que interrumpen la forma actual de hacer negocios y alejan a los clientes de empresas que no pueden cambiar y adaptarse.

Herramientas y aplicaciones de software, robots y un sinfín de otras tecnologías digitales "... Están haciendo por el poder mental – la capacidad de utilizar nuestro cerebro para entender y dar forma a nuestros entornos – lo que la máquina de vapor y sus descendientes hicieron por el poder muscular" (Brynjolfsson & mcafee, 2014: 7–8). La tecnología digital, adecuadamente aprovechada, puede permitir que las personas, las empresas, las ciudades y los gobiernos se vuelvan más inteligentes, ampliando sus capacidades y adaptándose a las condiciones nuevas y cambiantes. Como forma organizativa ágil (Alberts, 2007), la organización digital estará poblada de individuos y equipos que estén bien con la tecnología y que puedan colaborar tanto dentro como fuera de la organización para realizar mejoras en los procesos y desarrollar nuevas soluciones.

En nuestro artículo, ofrecemos a los diseñadores de organizaciones, agentes de cambio y gerentes un marco conceptual para el diseño de una organización digital, identificando sus principales componentes y mostrando cómo deben armarse. Una empresa totalmente digital es una poderosa combinación de personas,

tecnología y capacidad de organización que se adapta bien al entorno económico y social actual. En la primera sección, analizamos cómo las organizaciones utilizan las tecnologías digitales para aumentar su eficiencia y eficacia. Las tecnologías digitales aumentan y apoyan las actividades de trabajo y la toma de decisiones, conectan a los miembros de la organización y ayudan a gestionar las relaciones con clientes, proveedores y otras partes interesadas. En la segunda sección, describimos la arquitectura organizativa adecuada para una organización digital altamente colaborativa y que requiere mucho conocimiento. Esta arquitectura está orientada al "actor", es decir, prima la capacidad de los miembros de la organización para autoorganización mientras realizan sus tareas de trabajo. Las organizaciones orientadas a actores dependen principalmente de protocolos, comunes e infraestructuras para mantener el control y la coordinación en lugar de mecanismos jerárquicos. En la sección final, analizamos cómo aplicar la arquitectura orientada al actor para aquellas organizaciones que desean desarrollar sus capacidades basadas digitalmente. Aquí abordamos las habilidades y la motivación de los actores, la creación de comunes que apoyan sus actividades laborales, y los protocolos e infraestructuras que conectan a los actores y facilitan sus interacciones.

CONCLUSIÓN

Las organizaciones digitales están aumentando tanto en número como en sofisticación. Hemos descrito cómo las tecnologías digitales pueden integrarse en las organizaciones y hemos demostrado cómo los principios y diseños orientados al actor se pueden utilizar para organizar y realizar actividades. Las organizaciones digitales orientadas a actores son colaborativas, ágiles y mínimamente jerárquicas. En muchas industrias, están pobladas por agentes humanos y digitales que trabajan juntos en colaboración. Las organizaciones digitales necesitan líderes tecnológicamente conscientes y expertos que puedan establecer la agenda digital y crear el contexto para la digitalización de cada aspecto relevante de sus organizaciones. La digitalización se está produciendo a un ritmo acelerado; líderes exitosos necesitan sincronizar sus organizaciones con la velocidad del reloj digital.

TRANSLATED VERSION: FRENCH

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VERSION TRADUITE: FRANÇAIS

Voici une traduction approximative des idées présentées ci-dessus. Cela a été fait pour donner une compréhension générale des idées présentées dans le document. Veuillez excuser toutes les erreurs grammaticales et ne pas tenir les auteurs originaux responsables de ces erreurs.

INTRODUCTION

Les technologies numériques transforment l'économie mondiale. Dans son livre pionnier Being Digital (1995), le futuriste technologique Nicholas Negroponte (1995) décrit comment l'ancienne économie industrielle serait rongée par une nouvelle économie numérique. En outre, la technologie numérique permet aux membres d'une organisation de s'auto-organiser et ainsi d'éviter les retards, les distorsions et autres effets néfastes des systèmes organisés hiérarchiquement (Benkler, 2002). Les entreprises établies reconnaissent que les technologies numériques peuvent les aider à exploiter leurs entreprises avec une plus grande rapidité et des coûts plus bas et, dans de nombreux cas, offrent à leurs clients des occasions de co-concevoir et de co-produire des produits et des services (Sambamurthy et al., 2003). De nombreuses entreprises en démarrage utilisent les technologies numériques pour développer de nouveaux produits et modèles d'affaires qui perturbent la façon actuelle de faire des affaires et éloignent leurs clients des entreprises qui ne peuvent pas changer et s'adapter.

Outils et applications logicielles, robots, et une foule d'autres technologies numériques « ... Font pour la puissance mentale – la capacité d'utiliser notre cerveau pour comprendre et façonner nos environnements – ce que la machine à vapeur et ses descendants ont fait pour la puissance musculaire » (Brynjolfsson & mcafee, 2014 : 7–8). Bien exploitée, la technologie numérique peut permettre aux individus, aux entreprises, aux villes et aux gouvernements de devenir plus intelligents – d'élargir leurs capacités et de s'adapter aux conditions nouvelles et changeantes. En tant que forme organisationnelle agile (Alberts, 2007), l'organisation numérique sera peuplée d'individus et d'équipes qui sont faciles avec la technologie et qui peuvent collaborer à l'intérieur et à l'extérieur de l'organisation pour apporter des améliorations de processus et développer de nouvelles solutions.

Dans notre article, nous offrons aux concepteurs organisationnels, aux agents de changement et aux gestionnaires un cadre conceptuel pour la conception d'une organisation numérique – en identifiant ses principaux composants et en montrant comment ils devraient être mis en place. Une entreprise entièrement numérique est une combinaison puissante de personnes, de technologie et de capacité d'organisation qui est bien adaptée à l'environnement économique et social d'aujourd'hui. Dans la première section, nous discutons de la façon dont les technologies numériques sont utilisées par les organisations pour accroître leur efficience et leur efficacité. Les technologies numériques augmentent et soutiennent les activités de travail et la prise de décisions, relient les membres de l'organisation et aident à gérer les relations avec les clients, les fournisseurs et d'autres parties prenantes. Dans la deuxième section, nous décrivons l'architecture organisationnelle qui convient à une organisation numérique à forte intensité de connaissances et très collaborative. Cette architecture est orientée « acteur » – c'est-à-dire qu'elle accorde une grande importance à la capacité des membres de l'organisation à s'auto-organiser tout en accomplissant leurs tâches de travail. Les organisations axées sur les acteurs s'appuient principalement sur les protocoles, les biens communs et les infrastructures pour maintenir le contrôle et la coordination au lieu des mécanismes hiérarchiques. Dans la dernière section, nous discutons de la façon d'appliquer l'architecture axée sur les acteurs pour les organisations qui souhaitent développer leurs capacités numériques. Nous abordons ici les compétences et la motivation des acteurs, la création de biens communs qui soutiennent leurs activités de travail, et les protocoles et les infrastructures qui relient les acteurs et facilitent leurs interactions.

CONCLUSION

Les organisations numériques sont de plus en plus nombreuses et sophistiquées. Nous avons décrit comment les technologies numériques peuvent être intégrées dans les organisations et avons montré comment les principes et les conceptions axés sur les acteurs peuvent être utilisés pour organiser et effectuer des activités. Les organisations numériques axées sur les acteurs sont collaboratives, agiles et peu hiérarchisées. Dans de nombreuses industries, ils sont peuplés d'agents humains et numériques qui travaillent ensemble en collaboration. Les organisations numériques ont besoin de leaders technologiquement conscients et compétents qui peuvent définir l'agenda numérique et créer le contexte de la numérisation de tous les aspects pertinents de leurs organisations. La numérisation se fait à un rythme accéléré; les leaders qui réussissent doivent synchroniser leurs organisations à la vitesse de l'horloge numérique.

TRANSLATED VERSION: GERMAN

Below is a rough translation of the insights presented above. This was done to give a general understanding of the ideas presented in the paper. Please excuse any grammatical mistakes and do not hold the original authors responsible for these mistakes.

ÜBERSETZTE VERSION: DEUTSCH

Hier ist eine ungefähre Übersetzung der oben vorgestellten Ideen. Dies wurde getan, um ein allgemeines Verständnis der in dem Dokument vorgestellten Ideen zu vermitteln. Bitte entschuldigen Sie

alle grammatikalischen Fehler und machen Sie die ursprünglichen Autoren nicht für diese Fehler verantwortlich.

EINLEITUNG

Digitale Technologien verändern die Weltwirtschaft. In seinem bahnbrechenden Buch Being Digital (1995) beschrieb der Technologie-Futurist Nicholas Negroponte (1995), wie die alte Industriewirtschaft von einer neuen digitalen Wirtschaft weggefressen werden würde. Darüber hinaus ermöglicht die digitale Technologie mitgliedern einer Organisation, sich selbst zu organisieren und dadurch Verzögerungen, Verzerrungen und andere schädliche Auswirkungen hierarchisch organisierter Systeme zu vermeiden (Benkler, 2002). Etablierte Unternehmen sind sich bewusst, dass digitale Technologien ihnen helfen können, ihr Geschäft schneller und kostenschonender zu betreiben, und bieten ihren Kunden in vielen Fällen die Möglichkeit, Produkte und Dienstleistungen gemeinsam zu entwerfen und mitzuproduzieren (Sambamurthy et al. 2003). Viele Start-up-Unternehmen nutzen digitale Technologien, um neue Produkte und Geschäftsmodelle zu entwickeln, die die derzeitige Geschäftsweise stören und Kunden von Unternehmen wegnehmen, die sich nicht ändern und anpassen können.

Software-Tools und -Anwendungen, Roboter und eine Vielzahl anderer digitaler Technologien "... Tun für geistige Kraft – die Fähigkeit, unser Gehirn zu nutzen, um unsere Umgebungen zu verstehen und zu gestalten – was die Dampfmaschine und ihre Nachkommen für die Muskelkraft getan haben" (Brynjolfsson & mcafee, 2014: 7–8). Die richtig genutzte digitale Technologie kann es Einzelpersonen, Unternehmen, Städten und Regierungen ermöglichen, intelligenter zu werden – ihre Fähigkeiten zu erweitern und sich an neue und sich verändernde Bedingungen anzupassen. Als agile Organisationsform (Alberts, 2007) wird die digitale Organisation mit Einzelpersonen und Teams bevölkert, die mit Technologie vertraut sind und sowohl innerhalb als auch außerhalb der Organisation zusammenarbeiten können, um Prozessverbesserungen vorzunehmen und neue Lösungen zu entwickeln.

In unserem Artikel bieten wir Organisationsdesignern, Change Agents und Managern einen konzeptionellen Rahmen für die Gestaltung einer digitalen Organisation – und identifizieren deren Hauptkomponenten und zeigen, wie sie zusammengestellt werden sollten. Ein vollständig digitales Unternehmen ist eine leistungsstarke Kombination aus Menschen, Technologie und Organisationsfähigkeit, die sich gut für das heutige wirtschaftliche und soziale Umfeld eignet. Im ersten Abschnitt wird erläutert, wie digitale Technologien von Unternehmen eingesetzt werden, um ihre Effizienz und Effektivität zu steigern. Digitale Technologien erweitern und unterstützen Arbeitsaktivitäten und Entscheidungsfindung, verbinden Mitglieder der Organisation und helfen bei der Verwaltung von Beziehungen zu Kunden, Lieferanten und anderen Stakeholdern. Im zweiten Abschnitt beschreiben wir die Organisationsarchitektur, die für eine wissensintensive, hochkollaborative digitale Organisation geeignet ist. Diese Architektur ist "Schauspieler" orientiert – das heißt, sie legt wert auf die Fähigkeit der Organisationsmitglieder, sich selbst zu organisieren, während sie ihre Arbeitsaufgaben ausführen. Schauspielerorientierte Organisationen verlassen sich meist auf Protokolle, Commons und Infrastrukturen, um die Kontrolle und Koordination anstelle hierarchischer Mechanismen aufrechtzuerhalten. Im letzten Abschnitt wird erläutert, wie die akteurorientierte Architektur für Organisationen angewendet werden kann, die ihre digital basierten Fähigkeiten entwickeln möchten. Hier befassen wir uns mit den Fähigkeiten und der Motivation von Akteuren, der Schaffung von Commons, die ihre Arbeitsaktivitäten unterstützen, und den Protokollen und Infrastrukturen, die Akteure verbinden und ihre Interaktionen erleichtern.

SCHLUSSFOLGERUNG

Digitale Organisationen nehmen sowohl an Zahl als auch an Raffinesse zu. Wir haben beschrieben, wie digitale Technologien in Organisationen integriert werden können und haben gezeigt, wie schauspielerorientierte Prinzipien und Designs genutzt werden können, um Aktivitäten zu organisieren und durchzuführen. Schauspielerorientierte digitale Organisationen sind kollaborativ, agil und minimal hierarchisch. In vielen Branchen werden sie von menschlichen und digitalen Agenten bevölkert, die zusammenarbeiten. Digitale Organisationen brauchen technologisch bewusste und versierte

Führungskräfte, die die digitale Agenda festlegen und den Kontext für die Digitalisierung aller relevanten Aspekte ihrer Organisationen schaffen können. Die Digitalisierung nimmt zu; erfolgreiche Führungskräfte müssen ihre Organisationen mit der digitalen Taktgeschwindigkeit synchronisieren.

TRANSLATED VERSION: PORTUGUESE

Below is a rough translation of the insights presented above. This was done to give a general understanding of the ideas presented in the paper. Please excuse any grammatical mistakes and do not hold the original authors responsible for these mistakes.

VERSÃO TRADUZIDA: PORTUGUÊS

Aqui está uma tradução aproximada das ideias acima apresentadas. Isto foi feito para dar uma compreensão geral das ideias apresentadas no documento. Por favor, desculpe todos os erros gramaticais e não responsacule os autores originais responsáveis por estes erros.

INTRODUÇÃO

As tecnologias digitais estão a transformar a economia global. No seu livro pioneiro Being Digital (1995), o futurista tecnológico Nicholas Negroponte (1995), descreveu como a velha economia industrial seria consumida por uma nova economia digital. Além disso, a tecnologia digital permite que os membros de uma organização se auto-organizem e assim evitem os atrasos, distorções e outros efeitos nocivos dos sistemas organizados hierárquica (Benkler, 2002). As empresas estabelecidas reconhecem que as tecnologias digitais podem ajudá-los a operar os seus negócios com maior rapidez e custos mais baixos e, em muitos casos, oferecer aos seus clientes oportunidades de co-concepção e coprodução de produtos e serviços (Sambamurthy et al. 2003). Muitas empresas start-ups usam tecnologias digitais para desenvolver novos produtos e modelos de negócio que perturbam a forma atual de fazer negócios e afastam clientes de empresas que não conseguem mudar e adaptar-se.

Ferramentas e aplicações de software, robôs e uma série de outras tecnologias digitais "... Estão a fazer para o poder mental – a capacidade de usar os nossos cérebros para compreender e moldar os nossos ambientes – o que o motor a vapor e os seus descendentes fizeram pela força muscular" (Brynjolfsson & mcafee, 2014: 7-8). Devidamente aproveitada, a tecnologia digital pode permitir que indivíduos, empresas, cidades e governos se tornem mais inteligentes – expandir as suas capacidades e adaptar-se a novas e em mudança de condições. Como forma organizacional ágil (Alberts, 2007), a organização digital será povoada por indivíduos e equipas que são fáceis de tecnologia e que podem colaborar dentro e fora da organização para fazer melhorias de processos e desenvolver novas soluções.

No nosso artigo, oferecemos aos designers organizacionais, agentes de mudança e gestores um enquadramento conceptual para o design de uma organização digital – identificando os seus principais componentes e mostrando como devem ser montados. Uma empresa totalmente digital é uma poderosa combinação de pessoas, tecnologia e capacidade de organização que se adequa bem ao ambiente económico e social de hoje. Na primeira secção, discutimos como as tecnologias digitais são usadas pelas organizações para aumentar a sua eficiência e eficácia. As tecnologias digitais aumentam e apoiam as atividades de trabalho e a tomada de decisões, conectam membros da organização e ajudam na gestão de relações com clientes, fornecedores e outras partes interessadas. Na segunda secção, descrevemos a arquitetura organizacional que é adequada para uma organização digital intensiva e altamente colaborativa. Esta arquitetura é orientada para "ator" – isto é, coloca um prémio na capacidade de os membros da organização se auto-organizarem enquanto realizam as suas tarefas de trabalho. As organizações orientadas para os atores dependem principalmente de protocolos, comuns e infraestruturas para manter o controlo e a coordenação em vez de mecanismos hierárquicos. Na secção final, discutimos como aplicar a arquitetura orientada para o ator para as organizações que querem desenvolver as suas capacidades baseadas

digitalmente. Aqui abordamos as competências e motivação dos atores, a criação de comuns que apoiam as suas atividades de trabalho, e os protocolos e infraestruturas que ligam os atores e facilitam as suas interações.

CONCLUSÃO

As organizações digitais estão a aumentar em número e sofisticação. Descrevemos como as tecnologias digitais podem ser integradas em organizações e mostrámos como os princípios e desenhos orientados para o ator podem ser usados para organizar e realizar atividades. As organizações digitais orientadas para o ator são colaborativas, ágeis e minimamente hierárquicas. Em muitas indústrias, são povoadas por agentes humanos e digitais que trabalham em conjunto em colaboração. As organizações digitais precisam de líderes tecnologicamente conscientes e adeptos que possam definir a agenda digital e criar o contexto para a digitalização de todos os aspetos relevantes das suas organizações. A digitalização está a ocorrer a um ritmo acelerado; líderes bem sucedidos precisam de sincronizar as suas organizações à velocidade digital do relógio.