

Managing Uncertainty: Company's Adaptive Capabilities during Covid-19

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Abstract. The concept of organizational learning receives increasing attention and recognition in recent years as a critical enabler of organizational adaptation, survival, and growth during uncertain times. Our study applies a socio-technical lens to shed light on the organizational learning processes taking place in 40 various sizes and kinds of UK businesses during the critical, volatile, and unprecedented period – February–May 2021. The study identifies learning antecedents and key organizational context enabling and/or impeding learning processes and follow-up evolution within the studied companies. Our research confirms that in an uncertain environment, companies need to develop and apply ad-hoc learning and quick adaptation practices which are critical for survival and growth, and not standard management practices. The findings suggest, however, that even if employees have the capability, not all are able to capture and transform intelligence into learning and apply it at a strategic level, reconfiguring purposefully future operational capabilities to respond to environmental changes, as they are not empowered and supported by the organizational management.

Keywords: Covid-19, Organizational Learning, Dynamic Capability.

1. Introduction

The Covid-19 pandemic has created unprecedented business and economic challenges for all kinds and sizes of businesses. The pandemic has completely disrupted business models, supply chains, internal operations, and societal structures on a global scale. It has also accelerated the adoption of new technologies and new ways of working [1]. In such a volatile, uncertain, complex, and ambiguous (VUCA) environment managing organizations gets increasingly harder as along with the daily operations leaders and employees need to remain vigilant and make quick decisions on what needs to be done with respect to external changes.

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Knowledge and continuous organizational learning are core resources fueling organizational growth during volatile times by the creation of dynamic capabilities (DCs), which are known in the literature as “absorptive capacity” [2], [3]. These learning practices are enabled by context-specific, real-time market information, which can lead to organizational evolution through the development of competencies and routines of acquiring, distributing internally, interpreting, and storing external knowledge [4], [5]. The capability of regularly scanning, detecting, and absorbing information of interest, and sharing it effectively inside the firm is found to be a prerequisite for reacting flexibly, creatively, and quickly in the face of external shocks [6]. As Davenport and Prusak [7, p. 88] have suggested the most effective way for firms to remain competitive is to “hire smart people and let them talk to one another”. Firms that are able to learn from customers and competitors, constantly question routines, and quickly adapt their business practices by translating the learned into action, are more likely to minimize core rigidities, uncertainty, and risk, and create superior value and performance through constantly evolving capabilities and strategies [8], [2]. In an interview, by Lovallo and Mendonca in 2007, professor Rumelt from the Anderson School of Management (University of California, Los Angeles) shares that there are two ways for companies to achieve competitive advantage: (1) “invent your way to success”, or (2) “exploit some change in your environment—in technology, consumer tastes, laws, resource prices, or competitive behavior—and ride that change with quickness and skill” [9, p.3].

The DCs view accepts the importance of operating capabilities, but it argues that success in volatile industries and rapidly changing environments requires something more than ordinary operating capabilities (like product design and manufacturing), namely, adaptive processes and structures that enable companies to change their baseline capabilities, anticipate shifts in market demand, develop and integrate new technologies, learn from market events, and foresee and capture new market opportunities (dynamic capability) [10]. Therefore, a key factor for organizational excellence is the possession of organizational real-time learning and adaptation mechanisms and capabilities, seen as unique, heterogeneous resources, due to their valuable, rare, inimitable, non-substitutable (VRIN) qualities and imperfect distribution [7], [10], [11]. However, currently, there is an unclear link between micro (individual-level) and macro learning (organizational-level) as a foundation of DCs processes development and organizational evolution [12], [13]. Eisenhardt, Furr, and Bingham [14, p.1263] define such micro foundations as: “the underlying individual-level and group actions that shape strategy, organization, and, more broadly, dynamic capabilities”. Barney and Felin [12, p.145] add that “individuals and their interactions are central for understanding organizations and social systems”. However, many researchers suggest that the literature on organizational learning still lacks some relevant insights and a more precise examination of the organizational learning capabilities as building blocks of dynamic capabilities' formation [15], [16], [9].

Thus, to lead to a desirable outcomes, learning needs to be actively encouraged and enabled within organizations, starting from individual to organizational level, by the development of information detection, creation and transfer routines across organizational boundaries, flourishing culture of encouraging questioning of existing practices and beliefs, encouraging and incentivizing employees to engage in a dialogue and thus seeing links and implications of one’s actions to organizational goals [15]. If the latter conditions are not met organizations risk becoming obsolete and bound in “functional stupidity”, which is defined as an organizationally supported lack of reflexivity, substantive reasoning, and justification. It implies a denial to use intellectual resources outside of a “safe”, “accepted” and already “established” behavior and thus, supports avoidance of the discomfort, related to doubt, risk-taking and reflection [9], [3], [6].

Our study aims to identify the processes of learning triggered by the Covid-19 pandemic and the key organizational conditions supporting or blocking such learning at individual level and consequent practices changes/evolution at organizational level (micro to macro level) in 40 UK companies of various sizes and pertaining to different industries. Thus, undertaking a micro to macro perspective in studying the dynamic capabilities formation [16], [17], [18].

2. VUCA Environment, Organizational Learning, and the MIATSM Model

The emergence of the dynamic capabilities view was a reaction to the deficiency in existent strategy approaches in accounting for the VUCA (volatile, uncertain, complex, ambiguous) economy – fast-paced volatile knowledge, technology, and innovation economy [19], [20], [11].

In such a turmoil environment, of crucial importance is the ability to learn from mistakes and unlearn and destroy rigid routines to prevent strategic paralysis [21] and adapt to exogenous shocks, increasing complexity, and high-speed change [22], [23]. Unlearning and destruction of old rigid routines and mental models as initially claimed by [23] “creative destruction” are equally important capabilities. Helfat et al. [24] highlight that: “Sometimes erected on their own, and sometimes accumulated from yesterday’s scar tissue, there are barriers protecting a company’s core made up of history, culture, bureaucracy, and organizational routines that are every bit as daunting to break through as the strongest of physical or strategic entry barriers.”

However, desirable individual learning does not necessarily lead to desirable organizational learning, the learning organization must integrate individual learning into organizational learning by facilitating dialogue, questioning current practices, and developing employees’ cognitive capacities. Leaders in particular play a crucial role in exemplifying, encouraging, and facilitating dialogue, questioning current practices, and developing employees’ cognitive capacities [25]–[27]. The key entrepreneurial capabilities needed for people and resources orchestration and realignment of the enterprise often reside in the skills and knowledge of top and middle managers [28]. They need to provide strategic direction, lead by example in identifying and seizing strategic opportunities through knowledge integration, especially when rapid decisions are required [28].

Although increasing authors recognize the key role of organizational context [28] for the success of the capability’s formation, a detailed framework for such organizational learning [12] starting at the individual and unfolding to organizational strategic level still is missing, and thus, this study adopts the Market Intelligence Accumulation Through Social Media (MIATSM) model of Atanassova and Clark [29] which conceptualizes the processes and factors enabling/impeding organizational learning and practices reconfiguration/evolution. The interconnection of context and learning processes taking place in an organization is crucial in understanding the transformation and evolution of organizational practices. This study and the MIATSM model adopt a socio-technical lens in studying organizations as complex, changing, co-created, and re-created by its engaged actor’s dynamic system of interacting people, affected by aspirations, behavior values, and context [30], [31]. The MIATSM model recognizes that organizational learning starts with individual learning and is stimulated both by environmental changes, exogenous shocks, such as the Covid-19 pandemic, and internal context in a complex and iterative manner, and synthesizes impacting internal and external factors in explaining the organizational learning and evolution processes and their tangible or intangible positive outcomes [29]. The model is used as a lens to guide the understanding of the learning processes, their antecedents, and the context enabling or impeding desirable organizational returns through practice transformation.

However, to suit the current study scope, the model focus has been widened to account for the processes of scanning, information capture, and transformation into learning and the consequent changes in operating capabilities, and not solely for the social media market intelligence use for marketing practices changes, as originally designed. The model is built on the foundation of the absorptive capacity and DCs theory and no theoretical changes have been made to this foundation, nor to the contextual factors, solely the scope of the model has been widened to account for a wider array of information sources than social media, and also to capture the consequent effects of the developed or hindered learning on broader organizational context and not solely in the organizational marketing context. The research aim has been broken down into three objectives, in accordance with the three learning processes or absorptive capacity processes leading to DCs development. Also, as per the MIATSM model learning starts within an individual, then group and/or firm-level learning as long as the organizational context—culture, structure and systems, and leadership, of course, provide the essential internal learning facilitating conditions.

To draw inferences about the interactions between operating and dynamic capabilities and how the latter affect organizational desirable evolution/excellence through the application of the developed learning, this research consisted of three phases, depicted in the MIATSM model:

- The organizational background was developed using the MIATSM model in order to better understand context, market dynamism, triggers of organizational learning, and prior knowledge.
- An understanding of how absorptive capacity/learning processes took place at the operating capability level was developed by focusing on the ability to recognize the value and absorb new external information proactively through scanning and alertness and the organizational enabling/hampering conditions/context.
- Following from the above, assimilation/sense-making and transferring learning to relevant actors or storage of the learned was studied. Learning processes were explored by again considering the organizational enabling/inhibiting conditions.
- Lastly, the process of capturing value by exploiting the learned was studied, which encompassed the transfer of the learning to a higher-order dynamic level, and its exploitation in terms of how the learning affected subsequent organizational choices, seen as operational practices alterations for desirable change/capabilities and/or VRIN resources development/acquisition or reconfiguration.

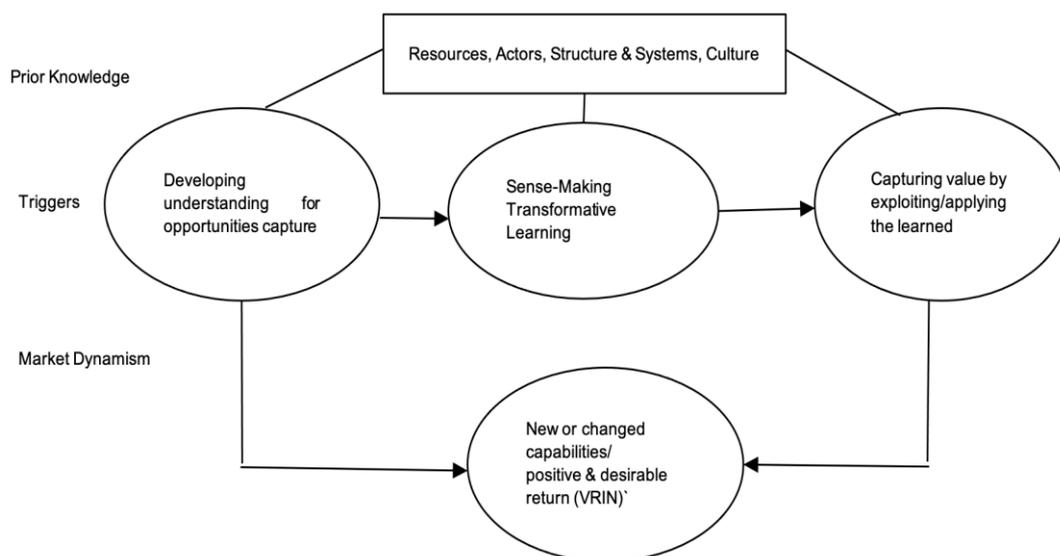


Figure 1. Modified MIATSM model of the processes of market intelligence accumulation, assimilation, and application [8], permission obtained by the copyright holder

As shown in Figure 1, the key conditions that enable and facilitate interactive learning processes are the exogenous conditions, on which a company usually does not have control but instead has to sense and react to:

- market dynamism,
- exogenous triggers,

and the endogenous conditions, on which a company has greater control and influence:

- endogenous trigger,
- background/prior knowledge,
- resources,
- actors,
- structure and systems,
- internal culture.

The latter factors and conditions have been investigated at the operating capability level of daily operational business activities, to achieve an in-depth understanding of how companies detect, absorb, transform, and use external market information to learn and evolve their operations, and how is the organizational context impeding or facilitating the learning processes formation [29].

- The three learning processes are inter-related and one lead to the development of the another, as represented by the connectors with arrow heads between them – individual to organizational level learning and follow up change.
- The organizational context—resources, actors, structure and systems, culture—are represented above the three learning processes and studied at each of the learning processes development, as they facilitate or impede the processes successful development/progression. They are linked to the processes with connectors without arrow heads.

A discussion of these key conditions follows.

2.1. Market Dynamism and Prior History

As a result of their unique histories, resources/assets, and strategic paths, and their specific processes of coordinating resources, organizational employees and teams develop heterogeneous capabilities [32]. The already developed absorptive capacity affects and shapes the expectations and abilities to predict future changes [32], and the “ability” to develop a new understanding for opportunities capture. Caiazza et. al., [33] claim that employees and teams with greater absorptive capacity will regard the crisis as an opportunity to get ahead of the competition. The rapid changes in the market in high-technology sectors or highly disrupted industries make individual and organizational learning particularly evident [34].

2.2. Organizational Structure, Culture, and Actors

The organizational internal environment, leadership and management, climate, and culture are important facilitators and/or inhibitors of the process of DCs formation [2]. As claimed by Argyris and Schon [35, p.23] “...organizational learning occurs when members of the organization act as learning agents for the organization, responding to changes in the internal and external environment of the organization by detecting and correcting errors in the organizational theory in use, and embedding the results of their inquiry in the private images and shared maps of organization”.

The importance of a firm’s values, such as commitment, open-mindedness, and a shared vision for the process of knowledge creation and exploitation are acknowledged in existing research [3]. The importance of the so-called “open-minded inquiry” or companies’ actions of active scanning of the environment and openness to new opportunities is substantial for companies’ ability to learn [36]. Organizational leaders are seen as key actors and knowledge accumulation and transformation facilitators, responsible for the coordination of networking, and knowledge accumulation activities, enabling a flourishing organizational climate and structures, leading by example, encouraging, empowering, and incentivizing employees to work autonomously, generate and share ideas, take calculated risks, and take ownership of their work [37], [38]. Employees need to understand how they are connected to the strategy and feel fully connected to the organizational purpose. Thus, leaders and middle managers have a key role in articulating the strategy in human terms —what capabilities the company will need to build, and what skills are required to do so — so it allows individuals to understand how their role fits into the overall strategy and allows them to see their work in a much more fundamentally connected way [39]. Organizational mission and vision need to also be clear and well communicated internally [40]. This shared knowledge and these values contribute toward the establishment of a sense of community and innovative culture by enabling trust and collaboration [40], [41]. Moreover, change does not simply involve technical advances, it disrupts a socio-economic ecology of work, and thus, engaged actors require support

to own and control the process of transformation, revising and recreating their understandings and interactions for the positive benefit of all concerned [30]. Thus, the role of supportive management is crucial in communicating a clear vision, and cultivating a flourishing climate and culture, devising a flat organizational structure, and encouraging internal information sharing. For a more detailed explanation of the MIATSM model and the importance of organizational contextual factors, please see [29].

3. Context, Method, and Data Analysis

Due to the nascent nature of Covid-19, a qualitative research methodology is adopted to generate a detailed contextual description of the impact of the phenomenon on firms [42], [43]. The methodology will not be unstructured, as it accommodates the MIATSM model in order to help structure and explain the studied phenomenon by enhancing validity and reliability, and also providing structure for the entire research. The study employed purposive sample selection in order to produce an in-depth understanding of the studied learning and evolution processes and highlight impeding and facilitating organizational context. Due to the heterogeneity of the studied population, the researchers conducted 40 semi-structured interviews until saturation was reached, to avoid bias and identify clear patterns in company behavior and themes in the gathered data. The interviews lasted 40–50 minutes each and were conducted in English by experienced academic researchers. Given the Covid-19 pandemic, interviews were conducted both remotely using Skype and Zoom and face-to-face. Due to seeking a contextual explanation, an inductive approach was utilized during our data analysis. An inductive, interpretivist approach, qualitative methods, and thematic analysis could reveal in-depth insight into complex phenomena by answering “how” and “why” questions as well as by accounting for the organizational context [43].

The in-depth qualitative research took the form of learning by reporting back to the researcher so the researcher can revise propositions and eliminate bias, through iteration between the theoretical framework, the MIATSM model, and data. Data was coded under key constructs of the MIATSM and thematically analyzed. The MIATSM model helped to identify patterns in the studied employees’ learning and transformation practices, and the resulting choices and actions. The MIATSM model helped to understand and explain the learning processes taking place in different companies by accounting both for the external and the internal dynamics, their unique leadership, and operating practices, and thus produce coherent findings. The coding was performed with the aim of identifying the themes, and patterns, underlying the phenomenon and its constructs, as depicted in the MIATSM model. In such a way, the reliability and validity of the study were ensured by providing categories to look for when analyzing the collected data, and thus prevented misunderstanding, oversimplification, or incomplete understanding. The analysis examined each construct of the model separately – organizational background and prior knowledge, market dynamism and triggers of the processes of learning, then individual learning at an operating level, sense-making and transfer to dynamic/strategic capability levels and the contributing context, and lastly how the three routines developed over time and enabled operational evolution, organizational excellence (micro to macro level) and/or VRIN resources development. Something was considered dynamic capability if it changes, creates, or extends organizational operating capabilities by creating or extending VRIN resources and abilities. The credibility of data was ensured by applying simultaneous data collection and analysis, prolonged engagement, and in-depth understanding of the studied organizational context. Interviews were part of a larger study and ongoing discussion, lasting more than ten weeks. Participants were interviewed on average once a week to ensure the depth and accuracy of the gathered information for each particular topic. Member checks and respondents’ validation were performed in order to ensure that their views and behavior are correctly understood and described [43]. The collected data, the theoretical framework, organizational context, and findings were reviewed multiple times by the researchers to ensure reflexivity, transparency, dependability, and thick description. The MIATSM model helped to eliminate any subjective judgment through the specific constructs–processes and

contextual factors—that were used as a coding framework. Organizational learning researcher’s guiding notes and questionnaire are shared in Appendix.

3.1. Participants Selection

Participants from knowledge-intensive companies and dynamic industries have been interviewed as such companies “Gain their competitive advantage by converting the skills and knowledge of their people (human capital) to intellectual capital (e.g., software solutions, ICT, communication and digital businesses) in a way that has value to their clients and is not easily copied.” [44]. They are companies “where most work can be said to be of an intellectual nature and where well-educated, qualified employees form the major part of the workforce” [45]. The creation, survival, and development of knowledge-intensive enterprises highly depend on knowledge development, management, and application [46]. As discussed in the prior knowledge section, the greater the prior knowledge/already developed absorptive capacity, the greater the ability to identify and exploit new unmet needs and opportunities or threats. Participants from traditional, stable industries companies have been interviewed also in order to ensure comparability of the results, as traditional larger companies are often accused of over-reliance on already established and successful routines and are often criticized for being unable to adapt due to their complex organizational structure, bureaucracy and hierarchy [19], [25].

Also, included in the sample are entrepreneurial, small companies as they are claimed as better than the larger companies in learning by doing approaches, flexibility, and quick learning/unlearning, and adaptation [45]–[47]. Their experiential learning or “learning by doing” approach to business is acknowledged as the most significant core competency concept for small companies [48]–[50] and is by nature ‘accidental’, experimental, and largely depends on informal communication with customers and stakeholders [22], [51]. Through such informal learning, SMEs recognize opportunities, adjust strategies, and take decisions [52]. It is believed that studying companies/cases where change intensively occurs through learning and adaptation, and companies, where changes do not occur or at least not so intensely and intentionally, will be both beneficial.

Also, the process of organizational learning development and its effect on enhanced capabilities and strategic benefits may need a long time to occur and to be realized, after the experience itself [50]. Consequently, the majority of companies are executing a process of incremental evolution through gradual learning, which takes time to develop and impact company activities [53]. Thus, the focus of the study is also on participants from established companies from traditional versus knowledge-intensive and dynamic industries and large versus medium and small size. It was highly important to select a diverse pool of participants to be able to see how the micro and macro processes of learning unfold, if they do, and, if not, what organizational context is stopping them, by developing “information-rich cases” “from which one can learn a great deal about issues of central importance to the purpose of the study” [54]. Interpretive research does not aim to validate findings in a positivistic sense but to provide a better understanding of a social phenomenon [55].

4. Findings

Findings are presented in Tables 1, 2, and 3 and discussed below. The findings in the tables are structured following the three learning processes and contextual conditions of the MIATSM model (information recognition, assimilation, and exploitation), and companies are grouped by size and industry dynamics.

Findings revealed that all the interviewed participants have been effective at recognizing, creating, or acquiring new information but notably less successful in making sense/transforming and applying that information to their own activities and/or organizational level. While employees in young, dynamic organizations and organizations from dynamic knowledge-intensive industries, such as education, consulting, science, finance, insurance, information technology, health service,

and communications naturally combine networking, experimentation with flexibility, agile project management techniques, and willingness to accommodate and respond to changing economic, competitive and pandemic landscape, consumer demand and behavior; employees in older, more mature companies from traditional industries found coping with the unprecedented change created by the Covid-19 outbreak and the implementation of scanning, sense-making, learning and adaptation/transformation initiatives particularly challenging due to scarce understanding of the strategic importance of external information, leadership short-sightedness/ignorance and lack of underlying organizational conditions–information sharing routines.

4.1. Macro Businesses

The studied macro businesses (> 250 employees) [56] were twenty in total. As part of the initial background gathering stage of the research it was identified that the main driver of change reported by the participants was the Covid-19 pandemic, and the urgent and unintended need to restructure departments, streamline processes, constantly monitor the environment, adapt, and apply government regulations while undergoing digitalization of operations. The main drawbacks and disruptions reported were staff cuts, expansion plans cancellation, and rapidly emerging new competition. Among the most desired new skills were ICT and digital skills, new ways of working in a more agile, ad-hoc, flexible way, and scalable online presence/e-commerce, data analysis skills, taking ownership and working autonomously, and a pressing priority to implement new technologies/software for collaborative working, business operations streamlining and customer relations management.

4.1.1. Macro Traditional/Stable Industries

The interviewees from macro traditional businesses, who were fifteen in total, at the background phase of the research, as their main competitive advantage reported their size, age, leading market position, industry experience, reputation, and trust. Despite the seniority level in their workplace, in terms of prior knowledge participants were focused on already established operations/routines, then on understanding, adapting to, and navigating through the fast-past market environment. The studied macro enterprises were hit hard by the pandemic and had to adapt to government regulations, as well as to changing consumer behavior and market volatility.

There was a mixture of junior and senior employees interviewed. In terms of information recognition and gathering practices, as per the MITASM model, junior participants expected information and directions for adaptation to the changing pandemic environment from the leadership and management, along with training and detailed guidance for implementation. As part of the background phase of the research, we found out that these enterprises had a traditional, hierarchical top-down structure; and interviewed employees were inclined toward following management prescriptions, “sticking to the plan” and/or applying gradual adaptations and changes in case prescribed by the top management. In terms of information recognition, employees primarily reported interest in internal company information and their own performance, without valuing and recognizing the need to stay alert to external arising market knowledge in order to develop quickly working scalable solutions to the emerging Covid-19 disruptions and restrictions. Moreover, they had no understanding of their organizational goals, mission, and vision and of the importance of acquiring and transforming new market knowledge to build up and evolve business operations as a coping mechanism against the devastating effects of the Covid-19 pandemic. Information about future aims and goals was not communicated by key actors, the leadership, and employee’s curiosity and open-mindedness weren’t encouraged, and thus employees did not perceive the emerging external and internal intelligence as a relevant and important strategic resource. Instead, they were focused solely on performing well their own daily tasks. The internal context studied, in terms of size (larger), the structure (hierarchical and top-down leadership), the industry (traditional), and the participant role seniority (lower in hierarchy/junior employees) have

been identified as key factors characterizing studied cases that were struggling to recognize and transform new information into learning and take respective adaptation actions in the face of devastating crisis. No resources and time were dedicated to information sharing and sense-making. The interviewed employees from these companies were used to and expecting directions from the leadership, and the leadership themselves were authoritative, treating employees as passive recipients of top-down guidance and instructions, without involving them in the decision-making, or sense-making processes.

As acknowledged in the literature, managers, and employees from established, larger firms often fail to execute and leverage their organizational learning into distinctive capabilities due to their focus on already established and successful operating routines, top-down, hierarchical structure, and authorities' leadership broken communication flow [19], [57]. For instance, a security officer at one of the largest UK airports stated that despite the restrictions on flying due to the pandemic "there is no new competencies and skills required to adjust to these changes in the environment apart from being patient and waiting for things to get back to normal." The interviewee didn't realize the extent of changes and disruption caused by the pandemic.

The grocery stores, among the rest of the traditional macro businesses, experienced the most drastic changes. They had to quickly expand the online presence, recruit more people, and train staff to adapt to government regulations. The internal environment has changed as there has been the need to recruit more employees to meet this change in business circumstances" (Data Analyst at Grocery Business). They faced increased new online competition. Their physical stores had to be restructured and there was an unprecedented demand for adaptation, new IT skills, and implementation of new systems and software. They had no choice but to act quickly and adapt business operating capabilities. Their businesses have been impacted at their core, and they shifted business models to meet the urgent need for a stronger and scalable e-commerce presence. They reported that they found particularly challenging to perform their daily tasks while navigating through the uncertainty by adapting to the new online communication and e-commerce platforms. The exogenous shock of Covid-19 crises created opportunities for new entrants unrestricted by existing resource commitments and organizational structures resistant to change, and thus, established players faced a pressing need for change: "currently due to the pandemic, the business model has shifted from sales through stores to online sales and deliveries". This has been challenging because the business has had to fundamentally upscale its online presence and delivery capabilities to meet the online demand for its goods and services. Changes have been detected by monitoring how busy websites are, constant communication, and training.

4.1.2. Macro Knowledge-Intensive Industries

The macro knowledge-intensive businesses, pharma, banking, and construction, demonstrated structured knowledge accumulation, assimilation, and application processes. They had already established analytics, R&D teams pre-pandemic, and were focused on responding to new market knowledge, although processes reported were slow and bureaucratic due to the importance of compliance with legislation and regulations in their respective industry. As part of their background research, it was found that they have already established teams, systems, and structures, as well as dedicated resources in place for producing business insights, and these insights were distributed within the company through the leadership and shared and saved in databases, intranet and/or specialist software. All participants from traditional knowledge-intensive companies exhibited also an understanding of the importance of agile working, adaptation, and working as a team. They had already established and working internal processes for evaluation, knowledge sharing, and storage. Very well realized was the importance of constant review and analysis, prior knowledge and awareness of overall organizational goals, quick correction of misconceptions, and removal of internal departmental information barriers. The respondents were mid-senior employees and the external environment and customer knowledge have been recognized as a key competitive advantage. A bidding engineer from a construction and

engineering company stated: “Constant changes – restructured departments – streamline how processes work, adapt to customers’ needs; certain customers are hard to please and have very specific requirements.”

Participants from big pharma companies reported, however, concerns about their organizations’ slow processes and overall inability to respond quickly enough to external changes, due to the highly regulated, bureaucratic, and hierarchical structure of their companies and industry, slowing and even preventing adaptation and reconfiguration of practices in response to opportunities or industry shocks. They reported that they had to do multiple quick trainings and operations adaptation due to the Covid-19 and the government directions, and restrictions.

A pharmacy technician stated that they had to train quickly to do Covid-19 tests: “the new processes are understood by demonstrations by pharmacists given to us, for instance, covid testing”. Big pharma HR trainee added: “The main change is the way the company works especially in this pandemic, learning how to work remotely as well as changing and adapting to digitization and exploring ways and means around it; especially in the pandemic, virtual working is something that is adopted and will also be adopted in the future.”

All respondents from traditional industry companies agree, however, that understanding their customers is key as well as developing further their online presence and IT skills. However, they expect their managers to lead and pave the path to the required changes. They exhibited an overall preference to “stick to the plan” and an interest in their own performance evaluation and in top-down information coming from the leadership, such as cost control, and efficiencies.

4.1.3. Macro Dynamic Businesses

The interviewed employees from the five dynamic, tech, consultancy, ICT macro businesses were much better prepared for the need for adaptation, and quick information processing. Particularly interviewed participants from the ICT, software and cloud services, business, and finance consultancy services, had already established agile working principles and practices, and company-wide drive/surge to be vigilant and adaptive to dynamically changing consumer, industry, and technology trends, as well as resolving issues as soon as possible. The interviewed employees from dynamic businesses reported as part of the background phase that their main competitive advantage was their specialist knowledge, technological know-how and in-depth market knowledge, their ability to remain flexible and to make complex decisions quickly by keeping their focus on goals, mission, and vision while exploring new insights and undertaking their daily operations. They had already developed absorptive capacity routines which helped them sense and react quickly to Covid-evoked changes. In terms of information detection and assimilation, they reported keen interest in both top-down and bottom-up, external, and internal information and made sense of the information through applying human understanding as well as by using technology. In terms of prior knowledge and practices, they were used to and eager to adapt, unlearn, and remove practices if needed, and thus, daily operating practices were assessed and corrected in two to four three weeks sprints/time frames. They believed that new market information is at the core of their decision making and that the more informed they are, the better decisions they can take. Interviewed employees reported, however, that they had also experienced new competition, and had to scale their online presence and digital services, and adopt new communication, information sharing, and remote working structure and systems/software. A big change was the need for additional and ongoing training, upskilling, and retention of employees. IT skills, willingness to take responsibility for one’s own pace of work and being more autonomous, flexible and responsive to change were some of the highlighted changes that took place in macro dynamic businesses. “In great extent, more knowledge you build, the more competitive advanced you are.” (Consulting Associate).

Development of new work styles, adoption of new software and virtual working culture, and conscientiousness were other claimed changes caused by the pandemic: “Employee gets the skill to be more aware and be more conscious and adapting to these new changes and environment

especially working remotely. For the organization is making sure that the network is adapting and ensuring that the virtual network is good and good IT infrastructure, structure, and systems have been put in place, in order to keep working in synergy remotely from various locations, so there is no setback” (Business Development Manager in ICT firm). Continuous changes to the software used were made, along with software integration and increase in security. The leading goal for understanding and correctly assessing the importance of new information was if it was helping them to do their daily job quicker and faster. As part of the exploitation stage of the research/applying the learning, reflection on past practices, iterations of practices, new tactics based on an in-depth understanding of customers and partners behavior, improved motivations and culture were the main adaptation practices outlined. As identified in the exploitation phase of the interview, the results of the ongoing information sensing and opportunities shaping/exploitation were: “Deeper understanding of the partners’ needs and communication styles, which results in launching campaigns quickly and efficiently, as well as efficiency” (Business Development Manager in ICT firm). They were able to gradually develop and evolve their capability to react and respond to change. Last but not least, the learning and adaptation had to happen along with carrying their daily tasks, and this was claimed as difficult and time consuming due to the increased amount of information and workload.

Macro companies’ participants reported both tangible and intangible skills and advantages development based on incoming information in daily work, such as trust, reputation, know-how, relationships, effective communication, multitasking, teamwork, maturity in prioritization, leadership, a deeper and better understanding of partners and customers and co-workers needs, ability to work independently and by being responsible for your own work. Please, refer to Table 1 below to see how the three learning processes unfold in the studied macro enterprises.

4.2. Medium Enterprises

The interviewed participants from medium enterprises (50–250 employees) [56] were seven in total, three from traditional stable industries and four from traditional knowledge-intensive (KI) businesses. The main changes faced by medium enterprises were again Covid-19, sustainability, the importance of diversity, remote working, flexibility, growing risk; too much and too messy information, and the need to change business practices too often and too quickly. The main organizational competitive advantage reported was their organizational expertise, reputation and established network relationships, experienced and knowledgeable staff, customer relationships and high-quality products. They were focused on executing and improving their ordinary capabilities. Moreover, junior employees from traditional/stable industries exhibited disconnect from and unawareness of mission and goals, and lack of alertness to new information. They were only interested in their own performance and management/leadership directions.

The participants from the four medium traditional businesses interviewed had a broad idea of mission, vision, and strategy. The Associate Director of Insurance Company reported facing growing risk and uncertainty due to Covid-19, an urgent need to change insurers partners and reconfigure practices accordingly. They exhibited a stronger inclination than the rest to learn and adapt in the hope to change business models and keep the business afloat.

As part of the background phase of the research it was clear that all interviewed participants from medium companies tended to put a priority, however, on top-down information distributed through management, such as government guidance on Covid-19, sustainability, diversity, professional development, and scientific publications. Speed and adaptation emerged as important skills to all, but they were left behind in the evaluation, sense-making process, and were only provided with directions and trainings, according to management's discretion.

Table 1. Learning and adaptation processes unfolding in Macro Businesses

Type of Company/ Industry/Size	Background information	Recognition/Seize	Assimilation and Sense-making	Exploitation/Shape	
20 in total/ 250 or more employees	Prior knowledge; awareness of mission, vision, perception of competitive advantage, triggers of learning, information flow.	Actors involved, structures and Systems, culture, resources.		Improved customer experience, products and services; Improved future practices, adaptable strategies (disruptive versus gradual), unlearning, and link to competitive advantage/company practices evolution.	Intangible assets VRIN.
Traditional– transportation, retail, hospitality	Top-down from management Hierarchical structure and rigid routines and culture; unaware of mission, vision, goals (depends on seniority); focus on established operating routines.	Interested in product updates, own performance evaluation, cost control, efficiencies, trends in the wider sector; own area of expertise; optimization of practices; No particular resources allocated.	Not alert to new market information, do not take decisions about information. Information is generally gathered and analyzed by analytics team and/or leadership and it is then passed to employees along with a demonstration, explanation of what to do next/following head office; the lower in hierarchy/junior employees are treated as passive recipients of information/instructions; overall preference to stick to the plan (banking, hospitality, transportation, construction); hierarchy and rigid structure, routines and culture. Information is shared via e-mails, intranet, newsletters, company guidelines and social media, webinars, calls and stored in wikis and databases; No particular resources are allocated to information sharing and storage.	Driven by overall aim to deliver better customer experience, improve productivity and accuracy, believe this has been achieved through following management guidance; leaders provide updates and instructions, and clear misunderstandings if they arise. Not involved in learning and transformation of activities.	Relationships, trust.
Traditional Knowledge- Intensive (KI)– pharma, banking, construction (Oil and Gas)	Top-down from management and/or through analytics team, bureaucratic and slow to respond to changes, aware of mission, vision, goals; junior employees are not aware of company’s mission and goals (depends on seniority), focus on established operating routines.	Interested in own performance, evaluation and information coming from leadership; information of interest is developments in the area, scientific knowledge, industry news, company trainings (pharma) R&D; different teams responsible for making sense and distributing relevant knowledge–legislations (legislations department), clinical trials (clinical department); weekly meetings, stand-ups, dashboards, retrospectives to share and discuss.	Regulatory, quality, legislation departments analyze and summarize; employees are trained in new processes; leadership distributes information put on an intranet and discusses through webinars or calls; Overall, preference to stick to the plan, (pharma, construction, banking) highly regulated industry; banking keen to adapt to serve customers better; leadership evaluates and/or hires external consultants. Goals are set and evaluated; knowledge and evaluations and goals are saved in the database/system; Systems used for knowledge sharing and storage–Teams, Google spreadsheets, Zoom; Yama, Pubmed (pharma); Webex, Power BI database.	Understand how customers are unhappy and services are not up to standard. It is important to know broad strategy and objectives to be able to understand new information and evaluate progress; however, follow strict regulations; big challenges are false information and the lack of time to make-sense and implement new practices/re-configure; Change is a must, analyze and apply, adapt; however, drastic changes cannot happen, too regulated, rigid routines, hierarchy, and bureaucracy (Pharma, PM); Gradual improvements through applying new learning and better understanding (Oil and Gas); However, agile teamwork continuous improvement and adaptation are recognized as essential.	Communicate effectively, built trust; external and internal relationship with employees, empower the team; multitask, learn fast, deliver value, efficiency.
Dynamic KIBS–tech and consultancy business, IC tech business; IT services and cloud software businesses	Top-down and bottom up (internal and external information); overall openness and alertness to changes in the industry and customers preferences, agile working practices, aware to an extent of mission, vision, and values.	Interested in tech, innovations, new IT skills, different courses, online resources; on a basis doing better, faster, smarter daily job and develop areas of interest and specialism (VoIP messaging platform, senior manager); all dynamic KIBS participants are aware of organizational guiding values and/or global policies, also exhibit a willingness to change and improve–new ways of doing the work, new philosophies for efficiency and knowing these help them to evaluate and assess practices and new incoming information; information about the client/market research/internal processes.	Carefully analyze, discuss and apply both technology and human understanding, apply to own work practice; cross-functional meetings and knowledge-sharing; colleagues are perceived as a trustful source of knowledge. Clear vision and awareness of goals is an essential part of the evolution; participants believe that the more knowledge they have the better understanding of the market landscape, the more competitive they become, technology drives new understanding; sharing information during meetings, evaluation, approaching colleagues, self-education are key; constantly looking for improvements the knowledge is shared and stored in SharePoint, OneDrive, Intranet, Google; Teams, Espace, QQ, Wechat,P6, Asana, Espace; Azure DevOps (ADO).	Better software and services that solve problems; participants claim that they need to know strategy and objectives to be able to achieve and evaluate progress and keep focus; customer experience is key; keen to adapt through learning and ad-hoc changes; challenging process due to too much information, too messy, cleaning and sorting the data is difficult/time consuming; A deeper understanding of partners and customers is at the heart of their strategy and empowers quicker and efficient campaigns (VoIP messaging platform, senior manager); Unlearning is in place: <i>“Yes, set up new practices or remove existing practices as they don’t work correctly for the business”</i> ; more informed, more accurate decisions (Software company).	Know-how, relationships, improved culture, reputation, built and sustained customer trust, professional confidence; maturity; prioritization; open mindset and empowering the team, conscientiousness, efficiency, and effectiveness.

Multiple trainings on innovation and new skills took place. Information and directions have been passed by management, but employees seem alert and willing to adapt. Awareness of goals and strategy was pointed out as a key and discussions with teams and management are highlighted as important and key mechanisms to make sense and move to action. However, strong concerns about the amount of information and the unprecedented speed of change have been shared by most interviewees. They found it particularly challenging to implement new practices while managing daily routines.

Multiple ad hoc changes and innovations took place in the education sector and online education experienced a complete explosion during the pandemic. A multitude of education technology solutions emerged, and schools and teachers had to adapt quickly and test various platforms and technologies to identify the most suitable ones. They had to develop team working skills and collaborative culture while adapting their teaching methods to the new online environment and the new communication means/platforms, while also experimenting with various tech solutions/platforms in search of the best platform for teaching and interaction with pupils. They had constant meetings and multiple iterations of practices “Feedback is given, and meetings can be held to discuss what the next logical step to take is.” They were guided by the values of educating pupils: “The work environment must be a priority and be maintained to a high level because educating young children is very important.” The changing teaching model to remote and the urgent need for adaptation resulted also in a cultural shift and trust: “There is a lot of respect between colleagues, and everyone is going out of their way to help everyone due to the struggle that everyone has been going through.” “Being adaptable and flexible to fix new problems which are being introduced and using the knowledge to help others. Being friendly and approachable is important because it means staff, parents, and children will feel comfortable around you.” As a result, the respondent highlighted that “The school is a much safer and cleaner place to be in. People trust and appreciate the school and it shows how many people are affected by everything it does to support people.” They also developed a collaborative culture: “Split up the work between colleagues and work together; The work environment must be a priority and be maintained to a high level because educating young children is very important.” Schools and the education sector adapted and transformed their education delivery model: “Yes, there is always a priority to implement new operations such as following Covid-19 regulations as well as preparing and supporting children for the work in English.” Forced by the pandemic they had to complete their daily teaching duties while adopting new digital technologies and ways of working as a team. Unlearning old ways of working, removing rigid routines quickly, and motivating employees/teams/pupils, adaptation, and working smarter emerged as key priorities for the educational sector.

Senior Project Manager in the construction industry also confirmed: “The implications are, if we don’t adapt and take these new innovations on, our competitors will replace us.”

Less experienced employees, however, similarly to the employees from traditional macro businesses expected top-down information, instructions, and directions from the management, rather than being alerted and open-minded themselves, although they were front-line employees and in direct constant contact with customers, suppliers, and/or competitors. Multiple intangible skills of trust and support, communication and IT skills, respect, as well as competence and increased efficiency have been developed: “Everyone is going out of their way to support struggling teachers and pupils” (Teaching Assistant at Primary School).

Please, see details about the three learning processes and how these unfold in the studied medium enterprises in Table 2.

Table 2. Learning and adaptation processes unfolding in Medium Businesses

Type of Company/ Industry/Size	Background information	Recognition/Seize	Assimilation and Sense-making	Exploitation/Shape	
7 in total / 50–250 employees	Prior knowledge; awareness of mission and vision, perception of competitive advantage, triggers of learning, market dynamism, information flow.	Actors involved, structure and systems, culture, resources.		Improved customer experience, products, and services; improved future practices, adaptable strategies, unlearning and link to competitive advantage.	Intangible assets VRIN.
Traditional–PM for construction business railway infrastructure; Council accountancy business change manager; kitchen staff in a fast-food chain	Leadership analyzes and distributes information internally (top-down information flow) and ensures implementation; drop notices, invitations for training; concerns about the unprecedented level of change; junior employees disconnected from mission, vision, and goals.	Government guidance on Covid-19; information about sustainability, environment, and diversity; remote working; professional development and scientific publications; developments in their own area of expertise.	Reading and speaking with other colleagues (council accountant); through a superior manager who overlooks reports and speed and adjusts to the environment (fast-food chain); information is shared in meetings; e-mails, conference calls; intranet; zoom; training on innovations and new skills; experience and knowledge of company and industry guide understanding (PM railway); store targets/customer satisfaction/known goals, such as sales-profit targets/speed of serving; customers guides understanding (Fast food chain).	Well realized importance to adapt to changing customer behavior and evolve quickly; new ways of doing work, smarter and efficient; unlearning is key; change is a must, otherwise competitors will overtake them; senior employees or PMs are open to undertake change initiatives; however, less experienced employees expect and receive direction from the management.	The constant evaluation and learning lead to responsiveness to change and a desire to adapt and implement changes quickly.
Traditional KI x 4–teaching assistant, a primary school; insurance broker; manufacture sterile items/parts for medical industry (Engineer); clinical trials associate	Top-down along with market information; creating motivating pupils experience is a key; through analytics team; and external about market changes and Covid-19; headteacher analyses, IT skills, flexibility and adaptability become key.	Government regulations; scientific publications; having the right network of connections (insurance broker); Internet, connections; industry conferences.	Keen to adapt through learning and there is a growing risk (insurance broker); It is passed by leadership along with directions on what to do: different employees are told what to do and how to proceed and how they can help (teaching assistant); discuss information with directors to understand how it affects the school.	Change is possible, but it requires careful planning; change insurer partners and adapt practices; learning new skills and adapting fast, change is approved by the council and matches the overall goal; online and blended teaching; the school is safer and cleaner.	People appreciate everything that the teachers are doing; trust, support, improved communication, and IT skills; respect, “ <i>everyone is going out of their way to support struggling teachers and pupils</i> ”; increased efficiency.

4.3. Micro and Small Businesses

4.3.1. Traditional SMEs

The interviewed participants from micro and small companies (1–50 employees) [56] were ten in total, five employees from traditional stable and five employees from dynamic industries. The main changes reported by the small and micro companies interviewed were again Covid-19, remote working, growing risk and uncertainty, and higher prices of supplies. The new skills needed were again IT skills, data analysis skills, and e-commerce/scaling online presence.

As part of the background phase of the research, the interviewed participants from small traditional companies reported no formal, planned strategy, but all strived to provide the best quality services to their customers through constant networking with customers and competitors. Nonaka [15] characterized knowledge-creating companies as places where “inventing new knowledge is not a specialized activity...it is a way of behaving, indeed, a way of being, in which everyone is a knowledge worker.” They did not have a mission and vision, nor a formal strategy, but they were absolutely focused on their customers and learned and interacted/networked closely with them, suppliers, and constantly monitored competition. As part of the recognition phase, the participants exhibited, however, a strong drive to remain viable and thrive, to sell the best quality products, and to maintain, and enhance customer satisfaction through constant adaptation to changing consumer needs and the dynamic environment. An Indian Restaurant Manager says: “Not really if I am honest, we as a business just strive to do better every day and keep the business afloat.”

“Through practice, when I come across new ideas which give value to my activities, I seek to implement them quickly to ensure efficiency” (online retailer).

However, traditionally SMEs do not use automated systems or sophisticated software to collect or store information [58]: “When we get useful information and actually implement it into the organization, we do not store it into a database.” (Indian Restaurant Owner). The latter was confirmed during the assimilation phase of the research: “We actually do not have any sort of online database; everything is handwritten and any new information that we gather is all stored in either memory from the employees and me or we write it down on paper as a note form.” In terms of making sense and taking a decision based on the new understanding developed, he added: “We make sense of new information by everyone coming together and discussing what would be best for the business. All employees are involved in this process as everyone has a close relationship with each other and everyone can input something that can be helpful.”

All interviewed participants from small and medium enterprises highlighted as their competitive advantage their excellent relationships with customers and suppliers, their expert knowledge, excellent reputation, and their relationship with local councils. Traditionally SMEs are building their businesses on networking and keeping their fingers on the pulse of the industry, customers, and competitors [58], [10]. “You detect these changes by staying vigilant in the industry, you will start to notice price changes when you perform your daily activities, so just making sure you have a note of every change you see is helpful.”

“Also due to the Covid-19 pandemic, the volume of customers, compared to pre-Covid-19, has declined, so as a result, we have had to implement an online ordering system in order to increase the number of customers again.”

A retail store manager shares that now the most important is to develop relevant ICT and digital marketing and e-commerce skills: “Yes, more research on increasing online presence. Bettering sale technique over the web. Learn the most effective marketing strategies.”

“To the fullest extent, I am able to use my skills to set my business apart from the usual retailers in the market” (Online retailer). “Shorten the strategy and objective cycle to 6 months from 12” (Finance director, manufacturing).

Due to their scarce resources, however, most of the interviewed participants from micro and small companies were struggling to evolve fast enough and to embrace digital; and had to make hard choices on where to focus efforts and allocate organizational resources. During the exploitation phase, it became clear that particularly services SMEs were hardly disrupted by the pandemic, the government restrictions, and frequent lockdowns.

Through constant monitoring of the competition and customer preferences, however, interviewed participants from SMEs coped with change and stay in business, and adapted their practices: “The new understanding was that in order to run a restaurant in today’s society, you need to keep up with the age.”

Traditional services SMEs were severely harmed by the pandemic as they are anyway suffering resource constraints which made them even more susceptible to failure due to the frequent closures, restrictions, and lockdowns during the pandemic.

4.3.2. Dynamic SMEs

The employees from dynamic small and micro businesses knew the mission, strategy, and goals well and were focused on innovating and getting employees on board with their strategy and mission by explicitly communicating their strategy well before the Covid-19 hit: “3 steps to a successful strategy, encourages everyone to be a leader” (Software Engineer Project Manager). As part of the recognition phase of the research, it became clear that they had already implemented knowledge scanning and knowledge sharing mechanisms prior to the pandemic, and focused on adaptation, an agile operating model, and flexibility. For instance, a Software Developer in an imaging company states: “agile seeks to always be better and faster, it’s ingrained in our processes. Agile needs you to be able to react to these changes in plans.” They were successfully pivoting their working models and identifying new markets based on their core capabilities and their flourishing culture and climate, size, flexibility, and lack of bureaucracy. The interviewees from dynamic SMEs reported having continued their work almost seamlessly after the initial Covid-19 pandemic shock, without substantial setbacks. They were substantially better prepared and already have embraced customer-centricity, agile operations, and also ability to relocate resources quickly in response to pressing demands/crises. In the assimilation and sense-making phase of the research, they reported that they had already established cross-functional teams, hybrid working, and online communication and knowledge sharing routines. They had already established policies and software for remote working, collaboration, information storage, and sharing, and a synergy between managers and employees regardless the working mode.

Responding to Covid-19 changes through ongoing scanning, alertness, and willingness to adapt, constantly monitoring customer behavior, and developing e-commerce, digital marketing skills were key trends among small and micro-companies.

The interviewees reported that changes were detected and evaluated based on their prior experience and insider knowledge of their business. The latter is well acknowledged as the effect of already developed prior knowledge. Information has been evaluated by keeping in sight the mission, vision, and objectives. Speed of change implementation was highlighted as the key element of success.

Please, see Table 3 indicating the learning processes and their context and implications in small and micro businesses.

Table 3. Learning and adaptation processes unfolding in Small and Micro Businesses

Type of Company/ Industry/Size	Background Information	Recognition/Seize	Assimilation and Sense-making	Exploitation/Shape	
12 in total/ 1–50 employees	Prior knowledge; awareness of mission and vision, perception of competitive advantage, triggers of learning, market dynamism, information flow.	Actors involved, structures and systems, culture, resources.		Improved/changed/new customer experience products and services future practices, adaptable strategies, unlearning and link to competitive advantage.	Intangible assets VRIN
Food services/ Indian restaurant (manager); sport/training for kids (coach); Catering and hospitality services in education; Furniture store (manager); Housing services; Seafood shops and restaurant (director);	Top-down and bottom-up/external and internal information is of interest; all employees are alert to market information; extensive internal discussions are taking place; constantly seizing new changes and information from a network of contacts and quickly adapt; sensing and responding to market and customer changes is key.	Understanding customers and innovating is most important; customers buying behavior changes (online now) and they are interested in sustainable furniture (store manager); moving business online, creating and implementing click and collect service (fish restaurant director); employees require higher salaries, increasing prices of food produce, the risk is higher, should stay vigilant; networking, understanding changing customer behavior and innovating as well as IT skills are a must (Indian restaurant manager).	Discuss as a team and act on the go; no KPIs and physical resources have been dedicated to information assimilation; detect changes due to experience and by keeping at sight mission, vision, and goals; usually management analyzes, this process would involve relevant company employees as well. Information is shared and stored using: WOM, phone, calls; outlook, teams, e-mails, intranet; smaller restaurant: do not store information/only stored in employee's memories; some challenges are: hectic, sometimes difficult to work in a team (sports coach); to have a clear understanding of what is required, the manager does not engage sufficiently with the team (Manufacturing, finance manager).	Increased profit, updated the menu, focus on online delivery (Indian restaurant); yes, able and willing to implement while operating normally (online selling system, fish restaurant); on a base of the information and new understanding allows promotions, special offers and management of demand (online retailer); online retailer set up social media accounts to drive traffic to the website; reconfigure and create new practices, systems are adaptable, scalable; <i>"Through practice, when I come across new ideas which give value to my activities I seek to implement them quickly to ensure efficiency"</i> (online retailer); speed the selling process and streamline (sea food restaurant ordering system); <i>"To the fullest extent, I am able to use and develop my skills to set my business apart from the usual retailers in the market"</i> (online retailer).	Gaining the trust of the parents and created safer environment (sports coach); incorporating skills, know-how, country culture into our business and are able to trade with a good reputation, every employee has to adapt our value, culture ensuring competitive advantage. (Finance, Manufacturing); trust, communication, team working, problem-solving skills (dinner lady, catering company); trust customer services, motivation (community housing services); strive to do better every day and keep the business afloat (Indian restaurant manager).
Software company (PM, Software engineer); Online retailer (self-employed); Engineering design and manufacturing company (Finance director) Software development company; Education, primary (learning support assistant)	Alert to all kinds of information, top-down; bottom-up internal and external information; flexibility and adaptation to change is key.	Uses prior knowledge to analyze and find needed information (software engineer, learning support assistant); agile scrum processes require constant review and adaptation; work in sprints (software developer).	Figure it out yourself then double-check with other team members—cross-departmental scrum sprint meetings to discuss, evaluate and correct errors. Saved in databases (Software developer).	Constant change and adaptation of processes and products portfolio (software developer); <i>"Agile seeks to always be better and faster, it's ingrained in our processes"</i> (software developer); change and adapt quickly in the dynamic environment (Manufacturing, Finance); test and spike/short experiment (software developer); <i>"on a daily basis, yes, adapting constantly"</i> (software engineer).	Reputation, relationships (externally and internally) skills, trust, loyalty

5. Discussion of Findings

Our research advanced dynamic capability theory by showing how organizations of all kinds and sizes can mobilize their internal structures and cognitive capacities in order to respond timely to changes. The key role of organizational leadership emerged clearly. Strategic leaders should make judicious choices about which capabilities to develop, depending on the situation, and should lead by example on the path to dynamic capabilities formation and company evolution. The importance of leaders/managers as the architects of flourishing context responsible for resourcing and empowering employees to experiment, generate, share, and develop new ideas and collaborate has been already widely acknowledged in existing literature [17], [30], [31]. Building and growing a scalable resilient organization in the face of uncertainty, and in a post-lockdown world, requires employee involvement, flourishing context, supporting and open-minded leadership, leading by example and by empowering employees, and aligning organizational learning practices, context, and mission. In line with previous research, our study shows that a fundamental challenge, however, in building dynamic change capability relates to changing the collective behavior of employees together with their associated routines, work patterns, and daily activities [7]. Such change of collective behavior on scale requires human action and endeavor on the part of both management and employees, and it can only happen by aligning individual and collective action and devising emergent, learned strategy through learning and experience [19].

Our research and the application of the MIATSM model contributed to the scarce understanding of how learning routines and capabilities are built, maintained, re-combined, adapted, and phased out in the face of a global crisis in terms of their constituent micro foundations—individual to organizational level learning. The MIATSM model proved actionable in uncovering such organizational learning practices, enablers, and blockers and showed that, in times of uncertainty, employees need to be vigilant and empowered to explore new possibilities while exploiting daily operations.

A sensing capability to identify emerging threats and opportunities is fundamental to the ability of a firm to adapt to volatile markets, technological uncertainty, and unpredictable competitors. As our research showed, the latter takes constant vigilance and orchestration of resources throughout scanning, searching, and exploring processes, including probing into latent customer needs, exploratory investments in relevant technologies, and timely intelligence about every part of the organization and its external environment. An ability to challenge internal mental models and routines is also key. Leaders need to be aware of the need to break old mental models and inertia (the tendency to jump to the most convenient conclusion), as the latter blocks organizational development and growth. They need to enable employees to take ownership of their job, accept uncertainty, adopt agile working practices, and realize that operating under a volatile environment requires a completely distinct set of skills and mind set than operating under stable conditions.

Organizations that possess an operating model whereby the contextual elements of the MIATSM—structure, people, processes, resources, and culture—are aligned to support learning and evolution towards a common desirable goal, are best prepared to reach quickly and adapt successfully to external shocks. Such flourishing contextual environment dynamic works as a backbone that ensures efficiency, agility, synchronization, and consistency when change is needed. Organizations, which possess such a vision for action and agility of internal context and established learning processes and open lines of communication and which are underpinned by a clear vision and open-minded leadership, outperform competitors by delivering more relevant and timely services, higher customer and employee satisfaction, and quicker times to market.

Traditional grocery, pharma, education, and small services businesses in the food industry were hit the hardest by the pandemic and had to adapt quickly to the volatile and disruptive Covid-19 impact in order to stay in business. Much like stated in Schumpeter's creative destruction theory,

Covid-19 accelerated innovation in those radically disrupted industries, helping them to respond to unprecedented times by implementing new technologies in order to survive the crisis. As highlighted earlier, large companies very often fail to adapt due to their complex organizational structure, bureaucracy, and hierarchy which all prevent their ability to cope with high-speed change [5]. Thus, it has been found that an urgent cultural and leadership style shift continues to be required within businesses as pointed out by Mumford [31], starting from the top, and removal of organizational information blockers, lack of reflexivity, and rigid adherence to wishful thinking to allow new opportunities capture through collective sense-making, learning and new technology implementation, timely training undertaking and IT skills development.

Our research shows that companies pertaining to dynamic industries were less disrupted by the pandemic as they were having at their core already developed agile working practices, alertness to new information, and willingness to experiment. The experiential learning processes were particularly notable in high-tech, ICT firms, financial and consultancy services companies, as these typically play a critical role as knowledge providers. As highlighted by Bednar and Welch [30] and George, Lakhani, Puranam [59], while it is not suggested that employees spend the whole of their time in an experimental, creative endeavor, the ability to engage in reflection over context and existing operating practices and (re-)imagine future practice through learning and constant adaptation is key for creating and sustaining resilient organizations. Our findings show, however, that the organizational learning capability was sabotaged unwittingly due to management short sightedness, rigid routines, broken communication flow, over-focus on ordinary routines, and lack of priority to support and empower the individual ability to capture and transform information into learning for organizational excellence in some of the companies, particularly large traditional macro businesses. Our study shows also that the flourishing entrepreneurial culture and climate are barely present in most of the interviewed companies and in some cases are absent in their leaders' agenda, who do not seem interested in keeping employees informed about, curious, and engaged in company's transformation and operations planning by taking advantage of and developing further their unique human qualities and skills. As highlighted by Montag et al. [60] and Qi, Liu, Wei, and Hu [37], exactly such gap and underappreciation of the significance of employee behaviors leads to the broken chain links between macro and micro levels learning and DCs formation.

Moreover, managing contradictory demands emerged as a must-have skill during the pandemic. All interviewed participants reported the need to reconfigure and adapt quickly while managing daily operations.

Thus, this research provides insights to move organizations up the learning curve faster and establishes the usability of the MIATSM model in uncovering both successful and effective, and broken knowledge/learning chains within organizations.

In terms of theoretical and policy contributions, our study provides important insights on the link between organizational learning and dynamic capabilities. The study extends the existing literature on DCs formation from micro to macro learning processes and important organizational context affecting the processes formation. Our study confirms the suitability and adaptability of the model in studying various organizational contexts, from inertia to rapid experimentation. The model can be used to guide organizational transformation through the development of operating learning routines leading to practice evolution and VRIN resources. The MIATSM model can be used as a diagnostic tool to identify and correct flaws in organizational context preventing learning and new capabilities development.

6. Limitations

The limitations of the research are related to the fact that only one participant was interviewed per company, and although it was an in-depth interview, the latter limits the findings. The contingent nature of dynamic capabilities, as well as the crucial role of leaders both merit greater attention in

how organizations can and should adapt when facing deeply uncertain times. Thus, future research needs to take a 360-degree perspective and focus on not solely employees but also the leadership team's role in ingraining employees in recognizing changes in the environment that required corresponding changes in management and organizational processes.

It is crucially important to understand in detail the role of the leadership team as a source of flexibility/alertness and action or inertia, and in the development of DCs.

7. Conclusions and Recommendations

Our research showed that, in times of crisis, managers of all types of companies must reject rigid mental models and engage in experimentation/learning by doing, open-mindedness and constant information scanning and sharing, and embrace new technological innovations. Aligning the internal context is key for successful adaptation in VUCA times. Leaders need to realize that employees do not just need to be capable to do their job as professionals, they also need to be allowed to use their competence and knowledge of context to be able to do “their best jobs”. Or to aim for professional excellence and take ownership of their job. This means professionals to be allowed (and supported) to make professional decisions. It means that professionals need to be trusted and they need to be able to trust their employers; which requires special care and attention to the human sustainability aspect of the organized activity. The latter is well aligned with EU vision or Industry 5.0 which also recognize and point out the importance to capture the value of new technologies and provide prosperity beyond jobs and growth by placing the wellbeing of the industry worker at the centre of the production process [62]. Thus, organizational leadership and management need to create and communicate a compelling knowledge vision within the organizations and stimulate and motivate employees to act as learning agents. As forecasted by Senge [63, p.69] “Perhaps for the first time in history, humankind has the capacity to create far more information than anyone can absorb, to foster far greater interdependency than anyone can manage, and to accelerate change far faster than anyone’s ability to keep pace....organizations break down, despite individual brilliance and innovative products, because they are unable to pull their diverse functions and talents into a productive whole”. Our research highlights the importance of aligning organizational context – structures and systems, and culture and people – with externally arising information, especially in highly volatile environments, to facilitate operations and transformation through constant individual and collective learning leading to organizational evolution. Our research demonstrated the importance of aligning leadership and employees’ vision and behavior with learning processes and that emergent strategy is key for DCs development. Such a “micro to macro” perspective on DCs is a more inclusive and holistic perspective to understanding the microfoundations of DC’s formation–flourishing climate and culture, motivational and open-minded leadership, internal information flow, and empowered employees [25]. The transformation of activities requires such new and existent knowledge integration (exploratory or exploitative) capabilities as a bias for action and practices for the “target” customer value co-production and co-creation.

In terms of future research, we suggest that researchers need to examine how managers and employees in companies can develop ambidexterity capability to manage dynamic change and conflicting demands–daily operations along with new capabilities development and implementation. It is interesting to study if and how some companies were able to develop and manage already ambidexterity structures and/or routines during and post-pandemic, as suggested by Atanassova and Bednar, 2022 in [64] further extended in this article. It is also important to study if companies will sustain some of the introduced changes/practices or they will push back to their usual operations, once the pandemic is over, like, for instance, currently many managers oppose the remote/hybrid working model and require from their employees to get back to the company offices [64].

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Organizational Learning Notes and Questionnaire:

ORGANIZATIONAL LEARNING: GUIDING NOTES

The Focus is on organizational learning and evolution enabled through the use of information.

This step is drawing upon work by Atanassova, Iva and Clark, Lillian (2015). Social media practices in SME marketing activities: atheoretical framework and research agenda. *Journal of Customer Behavior*, 14 (2). pp. 163-183. ISSN 1475-3928/10.1362/147539215X14373846805824.

DESCRIPTION

The interconnection of context and learning processes taking place in an organization is crucial in understanding the transformation and evolution of organizational practices. Therefore, we are studying organizations as complex, changing, and dynamic systems of interacting people affected by aspirations, behavior, and values and context. An organization is seen as more than just a combination of its parts, it is constantly co-created and re-created by its engaged actors (Bednar and Welch, 2020).

There are four key objectives in this analysis:

1. Background

Firstly, background information needs to be collected about the employee's awareness and understanding of the organizational mission, vision, general strategy, and perceptions of organizational advantages. Is their industry very dynamic or stable? Do they need to develop new skills, competencies to cope in their marketplace/stay competitive? Then, the three learning processes need to be studied. The learning processes, however, are highly dependent on the organizational context and are formed by enabling variables within and outside the firm: human and physical resources, internal company structure and IT systems, and culture and supportive leadership. Therefore, the key role of the organizational external and internal environment needs to be researched in the first two steps of the process of learning development (recognition and absorption/identification of new information and assimilation and sense-making of this information). The third step "Exploitation" aims to identify the developed/improved/evolved or removed organizational practices as a result of the two learning processes/the realization of the need for change/practice evolution.

2. Exploration (Identification of Information of Interest and Search)

The focus of objective two is on the first learning process – the recognition and absorption of new information. At that stage of the research, an important understanding needs to be developed about the process of information search and identification, how the process has been triggered and how important information is detected. An in-depth understanding of the organizational context is needed. Does the internal culture and leadership motivate employees to be alert/open-minded to new information? What is the organizational structure? Do they have a fluid/flat/flexible structure or rigid boundaries between departments and what IT systems are used? Who is responsible for detecting this new information and are there any resources allocated or incentives? The latter will allow us to understand the organizational enablers/inhibitors of this important first process of important information identification/sensing.

3. Assimilation (Sense-Making of Information)

The aim is to study the process of internal sense-making of the acquired information in the organizational context–the transfer to other relevant/concerned employees, departments, or management, for example. The focus here is on the process of sense-making and opportunities shaping. The idea behind this stage is to understand how the information identified actually affects business decisions or how is "translated" into new business practices, decisions or just stored for later use. We need to understand how employees together make sense/discuss the information and consider the potential improvement of their daily work practices doing their job better, quicker, or introducing new business operations.

Again, the contextual factors enabling or inhibiting the learning process need to be understood: Are employees willing, incentivized/motivated by [the organizational leadership](#) to exchange, share this new information and to connect/meet with other employees or the management to discuss it? Does this happen in a meeting or through chat/e-mail/internal messaging system/database/call etc.? Who would be usually involved? Do they have the resources and time to actually exchange these new information/ideas, to get involved in re-shaping/thinking about and changing daily practices?

Lastly, do they save somewhere descriptions of this new understanding developed on a base of the information and the follow up interaction/collective sense-making – database, e-mail, OneNote, another internal system/intranet?

4. **Exploitation (Newly created or altered work practices)**

The aim is to identify specific iterations/subsequent choices and practices, which took place as a result of the learning developed, such as reconfigurations, efficiencies, desirable changes in daily operations. We need to understand what and how was modified or newly created if anything.

ORGANIZATIONAL LEARNING QUESTIONNAIRE

Questionnaire and Discussion Guide: *Study of factors of how learning aspects/processes are integrated in organizational practices. All questionnaires are anonymous and confidential. All information provided is confidential and will only be presented, and reported outside the research team anonymously, so please be as open and honest as possible.*

Questionnaire ID:

Background Information

1. What is your company's mission and vision, values?
2. Do you have a written strategy? What are the leading aims and objectives?
3. To what extent your organization possesses an advantage in terms of knowhow, special skills, relationships and reputation, intellectual property?

Market Dynamism

4. What changes in your environment are you facing (dynamic vs stable industry)? How do you detect changes in the external/internal environment?
5. What type of new competencies and skills do you need to adjust to these changes in your environment? How do you intend to acquire those needed skills?

First Stage of the Interview: Identification of Information of interest and search

Actors

6. What is your role in the company? Are there any special skills (education, experience) associated with your role?
7. How do you usually detect and search for new information?

Culture

8. What type of information is of interest to you?
9. How do you recognize and understand that particular information is of value to you? Provide an example of information that you have acquired that became the basis of your work.
10. Do you need to know in-depth your current objectives in order to analyze and interpret the incoming information?

Structure and Systems

11. What IT system are you using for internal communication and sharing?

Resources

12. Are there any physical resources assigned to the information search? Such as: people, IT systems, budgets, and time.

Second Stage of the Interview: Sense-Making of Information

Actors

13. How do you perceive and make sense of the information? Who are the employees involved in the interpretation and evaluation process?

Culture

14. Do you have any guiding values, assumptions, or beliefs that underpin the understanding and evaluation?

Structure and systems

15. How this acquired information of interest is transferred to relevant parts of the organization?

Resources involved

16. Any specific IT system/database, meetings, e-mails, or time dedicated?

Third Stage of the Interview: Newly created or altered work practices

17. What new understanding emerged as a result of the incoming information that became the basis of your work?
18. What actions are taken in response to the information gathered?

(Prompt: Reflection on past practices, iterations of practices, objectives, tactics, recognize mistakes by provoking dialogue; access to new resources, bringing in external experts/resources, derail competitors, solve customers' problems).

19. Are you able to adapt or have you had to completely reconfigure or remove existing practices?
20. Are you willing to quickly reconfigure practices or your existing strategy and objectives, KPIs and targets are with higher priority, and you prefer to stick to the plan?
21. How do you seek to achieve new, additional value from implying these changes to your activities, and what are the implications for the overall organizational practices, if any?

(Prompt: reduced costs, improved efficiency, new faster ways of doing things, improved customers understanding, and better product/offering design)

22. Have you been able to implement changes simultaneously while managing present daily operations? How do they cope with all the information and learning processes while managing daily routines, if at all?
23. Are there, in your opinion, intangible resources (skills, know-how, relations, improved culture, reputation, trust) that you developed/acquired/executed?
24. To what extent the latter are connected (if at all) to your competitive advantage?

Is there anything else I didn't ask you that I should have asked?