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Creating a Collaborative Culture in a Multidimensional Organization

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Abstract

Customers of multinational enterprises (MNEs) exist almost everywhere. Cross border B2C e-commerce is expected to double by 2022 according to Forrester Research. How do MNE's efficiently leverage their talent or adapt to changing business environments across products and geographic markets? The author shows how awareness within a multidimensional organizational design can lead to effective collaboration. Leadership efficacy is critical in a multidimensional organization due to the complexities in the design. In this case study an MNE utilized a multidimensional organization design to reach customers in many parts of the world. The author presents findings from this case and ultimately extracts seven propositions to guide a discussion on an effective collaborative culture. Absent this understanding, risk of revenue loss is enhanced significantly.

Dimensional Designs

The most common form of multidimensional design is a matrix. Other designs with more dimensions are viewed as novel, with very little coverage in the literature. The idea of the matrix organization surfaced in the 1970's and 1980's. Some who have experienced this design have had difficulties due to the ambiguity in roles. Multinational enterprises (MNEs) have taken this a step further with multi-dimensional organizational designs. While the organizational chart may not indicate this, functionally it is how many of them actually work. Workers may report to one boss, but they are expected to network to be successful in the company. Consequently, when product managers are uncomfortable with the challenges associated with a matrix design, the situation is amplified and more complex in a multidimensional context.

Consideration needs to be given to the inadequacies of a matrix design so that similar risks of failure are not experienced in a multi-dimensional approach [1,2]. The matrix design should be thought of as a two-dimensional construct that typically is separated functionally and geographically, for the operation, and non-geographically, for support functions. Other construct variations exist. Some inadequacies with a two dimensional design include unclear responsibilities, a lack of accountability, political battles over resources, a risk-averse behavioral pattern, and loss of market share due to a lack of focus [3-5]. On the other hand, business units are not completely self-contained as they depend, to some extent, on external resources for achieving their objectives [6-8]. While the M-form (hierarchical design) still dominates thought processes, the actual tendency is for firms to move away from the underlying logic of the M-form to realize growth synergies. While mental anchoring on the M-form can render an MNE obsolete, or make a transition difficult, an effective multidimensional structure can enhance a MNEs growth synergy exploitation capability and preserve product managers' status, power, autonomy, and self-interest. With this in mind, and considering that most MNEs are actually multidimensional, how then can an MNE scale horizontally?

People can say that they are matrixed. The transition in reality has occurred from matrixed to network. Many large companies have abandoned the former for the latter. These scenarios are different. To succeed in a multidimensional business, company stakeholders (those who contribute to and benefit from an employer) need to know how to help their organization succeed. An employee's boss may be influenced by another leader in the organization with regard to performance reviews and promotions of employees that report to them. Similarly, taking into consideration that employees are the most important asset in a company, companies need to scale quickly to harvest revenue from dynamic markets. These dynamic markets make resource sharing critical and are a challenge in a multidimensional design.

These organizational design changes have also been market driven. Customers have multiple channels to purchase the same product from the same company. Companies are giving consumers multiple ways to buy from them. Companies are also offering vertically integrated solutions (a full kitchen) or bundles of product from warehouse stores (pallets of tile for kitchen and bathrooms). Either way, complexity has increased as products are more technical and multiple items must integrate or be regressively compatible with other parts. Additionally, the customer experience has taken on a new meaning, further adding to the complexity of a purchase. Additional revenue streams and market penetration opportunities come from warrantees and the ability to service the product sold.

Generational expectations have also changed. Younger workers expect that the boundaries in the organizational design and functional silos are easily penetrated. Consistent with the networking idea, new workers performance is linked to their ability to get feedback on their work and gain knowledge from colleagues in neighboring departments. If their work is dependent on multiple functions in a company, access is expected. While employees span functional silos, shared services do the same thing. Larger companies leverage economies of scale by centralizing certain functions and cost sharing. These functional areas must become centers of excellence for the benefit to be realized and allocation formulas need to be fair to understand performance. Examples may include inventory management, research and development, billing, facilities maintenance, human resources, finance, etc. Automation and connectivity are enablers of a multidimensional design.

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A definition of a multidimensional organization is required for us to proceed. According to Strikwerda and Stoelhorst a multidimensional organization has several characteristics.

- Responsibility for the success of the firm is distributed across the functions of the organization.

- Performance information is shared across the organization.

- There is one source of financial information.

- Resources are shared across the functions.

The multidimensional design (MDD) has a number of opportunities for competitive advantage. With the sharing of results, new business can be introduced and funded by the success of others. This allows the MNE to adapt to changing market conditions. Brand value can be exploited across an expanding portfolio of products. Bricolage can be exploited to combine technologies into new products. And, customer information can be shared to increase revenue per customer and to enable vertical market penetration.

In the context of this article, an MDD is discussed that was deployed as an organizational design to meet scaling needs in an MNE. They difference between the matrix structure and a MDD can be illustrated as per the Figure 1 below. In a matrix organization, the node where the two dimensions meet represents the employee who reports to two bosses, potentially with individual objectives or agendas. Reporting structures may be in a conflicted dysfunctional relationship with each other. In the multidimensional model for the case organization, the node is put forward as a profitability enhancing opportunity, or growth synergy opportunity, where representatives who are associated with the lines from each dimension can meet and align the entrepreneurial energy around discovered opportunities. The difference then is that a matrix design has a person at the node, while the MDD has an opportunity at the node.

In this design, managers are stakeholders in the exploitation of discovered opportunities. They own the lines in the structure. The leader in each dimension reports in to the same person, allowing for alignment through a singular agenda. Furthermore, this is reinforced through the organizational design and a reward system based on collaboration. Another difference between the two structures is in the planning and control processes. While the profitability of the

client oriented P&L is dominant, the P&Ls for products, the support functions, and for locations are also important as they contribute significantly to profitability. Profitability or cost is, therefore, measured and monitored in each of the four dimensions through dimension-specific P&Ls.

A final difference between the structures relates to the influence of management information systems (MIS) in a MNE. The MIS reports performance in each of the dimensions at all levels of the organization. This eliminates information asymmetries and transfer pricing, as examples, thereby turning the MNE into a truly integrated dyadic relationship between a customer-centric focus and operational synergy realization. In many matrix organizations the emphasis is on authority and power [9-11]. The management in multidimensional firms focus on the firm's joint customer-centric goals by leveraging MIS or enterprise resource planning (ERP) supplied business intelligence which point to opportunity rather than the disparate and conflicted agendas of two bosses who may be misaligned and unequally capable.

The critical result that will emerge from the empirical data in this study is theory about the realization of sustainable growth synergies in a multi-unit firm with a multidimensional organizational structure. Specifically, this study explores horizontal scaling within the MDD. This entails scaling using product managers who span geographic locations and support functions needed to service client in a MNE. Only a few studies have been accomplished that explore the implementation of these designs to exploit synergies across physical locations along multiple dimensions. Some firms studied were organized along the lines of key accounts, professional services, support functions, or facility management.

Managers are responsible for profits, market position, and customer retention, but they control very few resources. Often, resources are controlled by facility managers who are responsible for the bottom line. This creates tension between sales, as they develop new market opportunities, and facility managers, who are accountable for the efficient utilization of resources. Risk-averse behavior of resource managers must be confronted by market opportunities identified by account managers. Concurrently, market managers cannot be overly optimistic in their judgments about market opportunities. It is therefore essential that an MDD simultaneously reports performance on two or more dimensions. Managers need to be held accountable for their dimension as it contributes to overall firm performance and the execution of growth synergies. Unique challenges for implementation are present in a globally integrated enterprise with globally integrated products and services such as in this case study.

The author believes that the organizational design of a firm is a critical factor with regard to the success or failure with regard to the realization of growth opportunity. The most successful form of a MNE is the M-form, named by Williamson [12], in which activities are organized into separate business units [13]. Resources are delegated to managers charged with creating economic value for the firm. These resources are controlled within business structures that are measured for financial performance. The boundaries of the units are reinforced by financial systems. To illustrate, organizational design has been influenced by corporate agendas driven by synergistic savings evident in the form of corporate account management, shared service centers, and matrix organizations. Consequently, most businesses now depend on some resources that are controlled by other units.

The MDD is illustrated below. To explain how it works in the context of scaling consider the following. A client (C6) could want
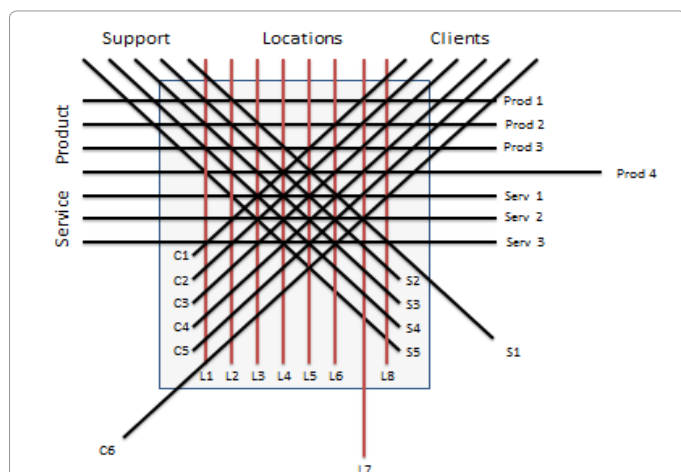
Figure 1: MDD scalability. This figure shows how the MDD lines can scale depending on the need and the dimension.

more of the company's products or services. A location (L7) could expand its product or service portfolio due to a local market unmet need. An enterprise resource planning (ERP) system (S1) could be used by other divisions to leverage profitability, whereupon they would share the cost of the system, improving profitability at the company. Lastly, a product (Prod 4) could be sold to other clients, possibly external to the company. Selling products at additional locations is horizontal scaling. The scalability of the MDD, exogenous to its existing domain, points to profitability as all of these instances exploit existing skills, infrastructure, and resources. This figure illustrates the scalability of the MDD products and services across business units that have an unmet need regardless of where they are.

A business unit in a MNE is given both autonomy and self-interest when it is given the opportunity to identify growth synergy opportunities, when it can define their value-based attributes, when it can determine deployment timelines and the scope of coverage, and when it can determine the task rollout sequence as represented in an operational deployment plan. The author has found that business unit autonomy is augmented in at least three ways. The first is through a suitable culture, as defined in part by its organizational design and its reward system. The second is through administration and control, which includes financial review, secondary structures, and a centralized workflow management system that provides organization-wide data and analysis. The third augmentation area is related to strategy. The strategy must have structure in order for it to be focused and executed. The framework for the strategy provides this. It is also selective in that it is prioritized based on contribution to the desired outcome as measured by business modelling, such as through a pro forma P&L and a business plan where applicable. Strategy also includes the sequence of the execution of tasks, ordered due to environmental conditions and dependency. Outcomes of exploiting self-interest include profitability in the form of social impact, organizational efficacy, team efficacy, and personal leadership efficacy [14].

To be specific, a critical success driver in an MDD is an integrated management information system (MIS) [15], assuming that it keeps current with firm adaptations to market dynamics and corporate advantage life-cycles [16]. An MIS is a lateral integration mechanism because it makes critical information and intelligence available to leaders in all of the dimensions of an MDD, thereby enabling action and mitigation. The MNE must evolve from unique local business systems geared to local needs to a networked social construct that drives transparency throughout the MNE across all dimensions [17]. A single set of common data definitions is necessary so that every transaction can be captured with suitable data density. This data can then be exploited along multiple dimensions, including reporting and analytics, across business units in a worldwide value chain. The information it contains is simultaneously available, providing for real-time sharing, change management, workflow adaptation, capacity manipulation, and production tracking. Additionally, for business intelligence it is also necessary that the MIS include customer relationship management (CRM) capability so that account managers can mine the database for order information and leads. This enhances the MNE's ability to maximize market share by exploiting customer spend budgets within applicable product categories across customers. It also fosters cooperation between managers, as performance accountability is shared across dimensions.

The multidimensional structure deployed in the case company, that is being evaluated in this article, includes the client as the primary profit center (diagonal) [18], the products and services as the secondary dimension (horizontal), the locations as the third dimension (vertical), and the performance of support services as a fourth and final dimension (diagonal). The MIS makes it possible for all stakeholders to obtain the same information in real-time, eliminating information asymmetries between and across dimensions. Cases are also used across and within all dimensions for monetizing opportunities made visible through business intelligence provided by the MIS or an enterprise resource planning (ERP) and CRM systems. The goal of all efforts is profits through the exploitation of growth synergies.

The dimensions in a multidimensional organizational design are important to the market. Business should be conducted with customers in the way that they prefer so that there is sustainable value in the relationship. The MDD deployed in this case study included a primary dimension that related to client management (C#). A P&L was provided to each account manager with regard to the client's overall global financial performance. This P&L was support function, location, and product agnostic. It allowed the managers to understand the profitability of working with all clients as well as each individual client. It also allowed for an understanding of profitability from the client, as it related to product type and the location where the work is done. The customer-centric nature of multidimensional firms is enhanced by treating clients as profit centers and by listening to them for the purpose of discovering service opportunities [19]. Economic gain is created by pursuing unique location-specific market strategies, by integrating product and service offerings for maximizing customer profitability [20,21], and by making the relationship sticky through optimized complexity and interdependency.

The case MNE operates in an industry that is networked. Consequently the center of innovation has shifted from the company to the network in which it operates. The network flourishes when it exists in a state of deep collaboration, cross-pollination, and concurrent engineering. This network develops value-based solutions in parallel exceeding time to market requirements [22]. Additionally, growth synergies can be achieved through alumni relationships within the industry-wide network. The exploitation of available market knowledge then becomes more critical than creating personal knowledge. Knowledge can be easily obtained from the network if it is not locally available. Organizational constructs must align with this environmental constraint and facilitates the exploitation of network-based knowledge resources [23]. Collaborative knowledge workers are increasingly valuable due to their collective influence on profitability opportunities in a multidimensional firm [24,25], and especially in a firm with a structure that requires collaborative arrangements [26]. The case company desires that knowledge workers are attracted to their firm, as they see that it is an opportunity to increase their personal market potential within the industry network [27,28]. Managing the chaos found in these networks is the current opportunity for competitive advantage in an MNE.

Quality of the Research

Creswell [29] describes validity in qualitative research as being the determination of whether the findings are accurate from the standpoint of the author, the participant, and the readers of an account. In this case, language and meaning are the data. Creswell, in parallel with Lincoln and Guba's [30] approach, offers qualitative researchers eight possible strategies for checking the accuracy of findings; triangulation, member-checking, rich descriptions, clarification of bias, the use of negative or discrepant information, prolonged time in the field, peer debriefing, and the use of an external auditor. The author selectively used these

strategies to ensure data validity with a focus on triangulation, peer debriefing, and member checking.

Endogenous validity refers to the validity of established causal relationships [31,32] or internal logic of the research [33]. This was achieved by establishing a clear thematic focus that guided the case selection, abstracting and comparing, conducting peer reviews of causal relationships, and by having an open and comprehensive explanation building. A thematic focus was evident in a clear definition of an overarching research theme (cross-unit synergies), a narrowing research focus (operative synergies), and a specific research question (the sustainable realization of growth synergies) along with a compatible case selection in which the constructs of interest could be discovered. Continuous abstracting and comparing [34,35] occurred as the author continuously compared data sets to build higher order constructs, preliminary results to emerging data to confirm or refine results, and observed causal patterns within the existing literature. This improved the validity of causal relations. Peer reviews of causal relationships were discussed with research colleagues for the purpose of capturing and testing additional perspectives based on experience in the field. Additionally, it enabled the validation of internal consistency and theoretical relevance of the author's arguments. The final technique for internal validity was through open and comprehensible building of explanations and causal relationships. The results were documented in such a way that the reader could reconstruct the causal relationship [36]. Openly, the author indicated initial ideas, deducted assumptions, and challenged potential inconsistencies.

Exogenous validity refers to the generalizability of research results critical for robust theory development [37] and depends on the research approach. Single case study empirical findings are difficult to generalize. Yin emphasizes that case studies do not allow for statistical generalization. More specifically, it is difficult to make inferences about a population based on empirical data collected in a sample. While issues of generalizability from case studies are severe [38], single-case studies are recognized to be substantial from an evolutionary perspective [39]. Single case studies can also provide new ideas and new thinking paradigms. They can help modify existing theories by exposing gaps and helping to fill them. There are several facts about this study that support the author's conclusions that the findings and propositions will be at least somewhat generalizable. Several of the constructs can be confirmed as being present in existing literature, indicating general theoretical relevance of the research [40]. The findings were confirmed through consultation with participants, who are operationally capable with varied experience in the industry, suggesting the potential transferability of the claims. Finally, the findings were somewhat generalizable due to the continuous comparison of similarities and differences within case items across different levels of analysis.

Reliability refers to the possibility that researchers can replicate the research activity and produce the same findings. A challenge for this replication is the attribute of qualitative research, in that it is bound to the context in which it is conducted, including time. Reliability in qualitative studies is best served by presenting sufficient information so that the reader can draw his/her own conclusions. The author attempted to ensure reliability through the explicit disclosure of the research design, including a detailed description of the research process, case selection criteria, interview guide, and methods for collecting and analyzing empirical data.

Data and Analysis

The purpose of this qualitative phenomenological research study,

using Moustakas [41] modified van Kaam method, was to explore the real-time experiences of stakeholders, or co-researchers, as they lived and influenced events occurring around them. Awareness is a transient experience [42] that may involve exerting influence, letting go, and redirecting energy and attention [43]. It also involves being present physically and mentally in daily life. Stakeholders have to anticipate events, make sense of existing environments, and exert influence over future trends. Weick [44] suggests that sense-making is a retrospective cognitive process that explains unanticipated events. He also suggests that events in a socially-created world both support and constrain action. Weick et al. [45] later suggest that individuals form both assumptions and conscious anticipations of future events. By examining sense-making and the development of mental models through actual lived, shared experiences, this study captures the subjective processes that have been largely ignored in the context of the connection between organizational design and growth in a multi-unit firm. Using the experience of stakeholders, the author presents a conceptualization of how individual participants in this study made sense of their lived experience. This was an ongoing process for participants as they refined their understanding of lived experiences and established new equilibriums.

Each section includes individual textual descriptions as well as composite descriptions concisely oriented and illustrated in a theme map structure. Moustakas suggested that the integration of textual and structural descriptions into a composite description, such as a relational table, is a path for understanding the essence of an experience. The composite description is an intuitive and reflective integrative description of the meanings and essences of a phenomenon, of which the entire group of individuals is making sense. The participants create meaning through their awareness of the environment, reflection on their experiences, consultation with others, focused response to an enquiry, and iterative refinement to these enquiries.

Coding

Data collection was facilitated by an interview protocol with specific questions oriented in a sequenced schema. Participants were solicited as volunteers from a pool of leaders based on a willingness to share information about the transformation of the case company division. Each volunteer co-researcher participated in the changes personally. Following each question, the participants' response was determined to be linked to the question asked and was determined to be meaningful prior to continuing. An answer could trigger a clarifying question, or a question formed to solicit a more fulsome answer, if needed. The additional information modified the answer and once again was determined to be fulsome or not. The data was added then to the data sheet and coded. Sub-code themes were also determined and grouped by code and sub-code. The data was surveyed by the author, who, due to personal experience, was able to apply an analysis for good (ANOG). Slight modifications were made as needed to reduce the noise in the data and ensure completeness and clarity. This was accomplished by consolidating like data points and simplifying others by stripping out noise and redundancy in the answers. The data was then resorted and generalized through categorizing. A pivot table was used to extract themes in the wording. The curated raw data was then posted in a table. In some cases most of the themes were unique, in which case a table was not used. From this data, dependencies, relationship, and the sequence of events were determined and organized into a theme relationship map. In some cases the data collected appeared as though the participant was confused about the question. In these cases the

author followed up with the participant and then added the newly acquired information to the raw data previously collected.

The raw data was collected from each participant for each data domain and sub-domain in the sequence in which it is presented in this chapter to promote a progression of thought. The data is separated into exogenous and endogenous domains as well with selected focus in both areas. In some cases, like roles, the participants offered information on themselves while commenting on data provided by their peers. Patterns that emerged in the data are presented as textural responses (what happened), structural responses (how did it happen), or composite descriptions (what the group experienced). Data responses that occurred most frequently within the theme category were given more significance and were typically mentioned first. Data was interpreted into theme patterns. These were broken into themes and then concisely into propositions, or findings of the study. Data items that referred to individuals, functions, line of business, locations, systems, or company names were obfuscated, eliminated, or given a pseudonym. The propositions, or findings, were formed and listed numerically. Within each proposition, a two-word summary was formed along with a statement that sums up the finding. For example, a central theme, norm strategy, or trigger may have emerged from the data as a result of coding. This data could then be categorized or filtered through the constructs being discussed that may include the strategic frame, horizontal strategies, or a narrowed scope as examples. This was the beginning of the theme map, or the outermost layer. The layers could then be elaborated on by breaking the outermost layer into sub-layers until it was reasonable to stop. This theme map was created to better describe the themes in the data and to show relationships and sequences between unique data items.

Awareness

The conscious experience of co-researchers is a continuously changing or flowing process of awareness [46,47]. Collaboration is enhanced by an awareness of the environment in which the organization has to meet its goals. Participants were, to a varied degree, aware of their environment and how it was changing. Typically there was a tipping point, or the confluence of awareness and intentionality, that triggered action planning and subsequent execution. According to Thompson [48], intentionality can emerge anonymously, involuntarily, spontaneously, and receptively. These specifically emerged in the data. A leader needs to be aware of many factors regarding their operation, including off-load methods, needs, cost, customer expectations, available reports, local policies, product requirements, deliverable specifications, and understanding the value of support functions. Metrics are critical to monitoring profitability that will show up in the financials. Performance evaluation and optimization results are influenced by a minimized cost structure; however, actions regarding this cannot be known unless current financial performance is known. Available operational data seen through the lens of mature and defined metrics allows the vertical leader to monitor work product and deal with operational issues and inefficiencies. This may relate to scheduling inefficiency in a global supply chain that shares capacity, keeps up with the security threat-scape, and has a quality system that is capable of catching issues before they are shipped. A culture of transparency enables progress monitoring and issue resolution. Access to reports and the ability to analyze data can lead to better understanding of underlying themes in the environment. In some cases, support services may need to help mitigate inefficiencies. Table 1 list 19 themes that emerged from 37 rich data descriptions. This awareness begins with the ability to have data about operational and financial performance. In the absence of this data, awareness is challenged. Knowing internal and external needs is also the beginning of awareness.

The theme map for awareness (Figure 2) includes six dependencies: metrics, operational data, customer expectations, financials, and culture. It also indicates that growth outcomes are dependent on these six areas. The growth enablers include work shifting, issue resolution, support needs, scheduling methods, and capacity utilization. Each of these has a relationship with the critical awareness themes. These
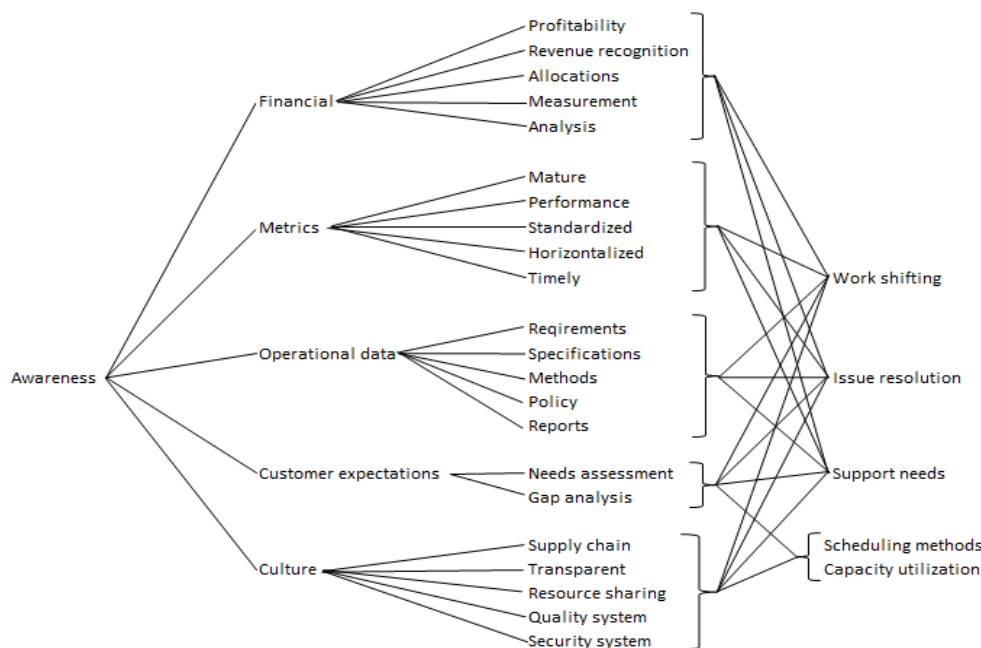

Figure 2: Awareness theme map. This figure maps awareness as a theme category into descriptive sub-groupings.

Awareness	Count
Monitor operational performance	6
Provide data	4
Financial analysis	4
Performance evaluation	3
Understand needs	3
Customer expectation	3
Client specification	2
Analyze cost structure	1
Customer satisfaction	1
Keep up on security changes	1
Monitor progress	1
Monitor reports	1
Network capacity	1
Operational data	1
Other facility cost	1
Productivity measurements	1
Revenue reporting	1
Spot errors	1
Understand support needs	1
Total	37

Table 1: Awareness themes.

critical themes are broken down further into several sub-areas. For example, financial awareness includes an understanding of awareness, financial measurements, and analysis. Work shifting has a dependency on the sub-items. For example, work shifting should be the product of financial analysis, measurement of usage and performance, and subject to allocations for overhead and coordination cost. Work shifting is also dependent on mature performance-oriented metrics that have been standardized horizontally across all locations. These must be available timely. Work cannot be shifted unless specifications and requirements are known. Deliverable creation is guided by policy and methods. Performance is displayed through an appropriate set of results. Work cannot shift until customer expectations are understood. These expectations are specific to local markets. The ability to perform tasks in other geographic locations, such as an off-load site, is not possible without closure of the gap analysis between what the location does and what the local market expects. Financial results, as it relates to revenue and profitability, should drive decision making that relates to work shifting. The location that receives the request for work must have a culture that enables great service. This includes an appropriate perspective on the sharing of resources, the fact that each location is a part of a global supply chain that is networked, and that there is a need for full transparency to guide effective decision making.

"[I will] work closely with facility leaders worldwide, to establish effective load balancing and off-load methods to eliminate capacity constraints in local offices" (RV272).

Issue resolution has a dependency on financial awareness. The local leader understands that profitability for the division is the goal. To that end, the local leader needs to understand how revenue and profits are experienced by the location that gets the work, as compared to the location that does the work. In the event that there is a delay or rework is required, a leader needs to know the impact of the lack of issue resolution and the time needed to achieve a resolution. This drives the urgency around the problem resolution activity and may trigger the request for support services to help, as an example. In a complex system, issues are often discovered through metrics and associated trends. These metrics should not be misleading, creating a false positive,

because the cost to resolve a false positive may be equally prohibitive. If metrics are not horizontalized the local situation cannot be effectively compared with similar situations at other locations.

Metrics must also be available when needed; otherwise the discovery time is elongated. Operational data in the form of specifications and requirements are a reference against which a deliverable can be compared. The gap between the deliverable and client expectation may determine the size of the issue. An issue in the deliverable points to an issue in the workflow or the incoming materials used in the process. Reports may point to inadequate or inappropriate methods or policies that may need to be modified. Culture has a bearing on issue resolution. A lack of transparency can obfuscate the root cause that may be anywhere in the supply chain. When resources are shared, dependencies on capabilities and culture emerge in the form of non-conformances and training disparities that must be resolved in order for the workflow to be reliable.

The need for support is part of the decision-making process for the vertical leader. Support may affect financial performance including profitability. Support functions may not have access to metrics or may interpret them incorrectly. Bias and assumptions may make support functions impotent.

"[I will] operate as the focal point in the company, supporting finance, sales and customer service for any requirement that interfaces directly with the products offered and/or managed by my [LOB]" (RV133).

They may not be aware of supply chain nuances or have access to the applicable information. Furthermore, they may not understand the disparity between the resources that are shared. Leaders take this into consideration as it relates to decision making on whether to solicit support services and consequently, they may decide to use them in a limited and controlled context to be optimally effective.

"[I will] develop a relationship with finance to make sure you are reviewing and understanding the numbers" (RV152).

Capacity availability and utilization are critical for leaders to understand. This does not just apply to local capability but also to capability within the network of business units. Capacity cost is directly related to profitability. Carrying costs during slower times is a burden that can be mitigated by rightsizing and utilizing scalability in the event of a demand spike. Volume, specification, and complexity variability are a normal part of a vertical leader's work environment. A suitable level of awareness and the ability for suitable and effective analysis allow for optimal decision making. Metrics and performance trends can inform these decisions in a timely way. These metrics need to be consistently used in all locations so that capacity at any location can exploited, as leaders are expected to deliver large rush orders not previously forecasted. Requirements and specifications drive workflow choices and available capacity.

"[I will] direct the planning and preparation of production schedules through subordinates and identify requirements for the business to improve efficiency" (RV113).

Scheduling methods may need to be modified to accommodate demand spikes and so must be understood and flexible. When customer expectations cannot be fulfilled, contingencies and negotiating tactics can still ensure a success. While a leader must understand that the resources in the supply chain are available, they must also be compatible to be exploited. A lack of transparency may keep this knowledge from a local leader, resulting in an expensive decision that could lead to delays.

In summary, the data suggests that awareness promotes the ability to achieve profitable growth. It enables work shifting, issue resolution, meeting the needs of support functions, and capacity utilization improvement. Financial information efficacy relates directly to business unit performance when revenue and cost are both aligned and accurate within a defined organizational structure. This alignment then allows for performance ratios and trend analysis that can drive decision making, investigations, and improvement. Augmenting these metrics, are workflow performance metrics related to delivery reliability and throughput rate. If another location does not have the capacity or speed needed to do a project, then work shifting cannot occur. These metrics together with operational data can lead to effective decision making regarding overall work performance. This information can also influence strategic planning. In some cases support functions such as finance, HR, facilities, etc. will contribute information to enable decision making and performance measurement. An example would be energy costs or tax structures. A leader also owns the culture at the location where they lead. This culture should align with the culture at other sites so that capacity can be leveraged seamlessly. This culture includes a supply chain perspective that encourages resource sharing, an awareness of quality and security requirements, and transparency, so that fact based decisions can be made. The following propositions summarize the key findings of this section:

Proposition 1 (Work assignment): Work can be profitably assigned when available, when capable capacity costs are understood, and when supply chain leaders aggressively share their resources.

Proposition 2 (Issue resolution): Problem resolution is accelerated by operational performance transparency and a clear awareness of expectations.

Proposition 3 (Measurement unification): The timely availability of data used similarly across all locations, offered up transparently, can accelerate strategic decision making and issue resolution.

Proposition 4 (Aligned culture): The constitution of the location culture must be appropriate and aligned with other locations to optimize capacity utilization in a network-based production schema.

Collaboration

Leaders need to engage with other leaders in the network-based production environment to make sense of the activities around the precipitating event. Leaders need to reach out to each other to make sense of lived experiences through participative sense-making [49]. Participants in this study have worked together over a significant period of time. Consequently, meaningful patterns of interaction have evolved. A shared history helped participants to gauge the thoughts and reactions of their colleagues. Collegial interaction helped participants create meaning through self-organized social encounters, combined histories, and expectation alignment. Table 2 presents the 23 themes that emerged from 51 rich data descriptions and which indicated that collaboration is critical to the success of vertical leaders.

"[I will] work with sales to develop and pursue opportunities for … servicing in [location] and support worldwide product servicing efforts" (RV245).

The capacity in the network of locations cannot otherwise be leveraged for local production needs which may exceed local capabilities. When demand is lower than available capacity, these locations can engage in load balancing to avoid carrying costs and to avoid brain drain from their own organization.

Themes	Count
Collaborate	9
Leverage network capacity	6
Load balancing	5
Coordinate ERP deployment	4
Sales collaboration	4
Share capacity	3
Contribute technology	2
Support other divisions	2
Evolve the organization	2
Contribute enhancements	1
Contribute to strategy	1
External servicing	1
Participate with sales	1
Process unity	1
Relationship with Finance	1
Solicit support	1
Support other locations	1
Support planning	1
Support with capacity	1
Support WW efforts	1
Offshore support	1
Work shifting	1
Feedback to off-load hubs	1
Total	51

Table 2: Collaboration themes.

"[I will] work closely with facility leaders worldwide, to establish effective load balancing and off-load methods to eliminate capacity constraints in local offices" (RV15).

Collaboration is also needed to evolve the organization. This relates to the sharing of knowledge that is centered on capabilities. Technical or methods development could benefit other locations. For example, a unique requirement at one location may become a requirement at another. Through information sharing all locations can contribute to technology maturity and system enhancement. Each leader should also reach out to solicit assistance from support functions. Feedback to off-load locations on their performance enables global learning and capability parity in all locations. This enables work shifting to exploit unused capacity and lower the cost of capacity.

The theme map for collaboration, illustrated in the Figure 3 indicates that there are five aspects to effective collaboration. Collaboration influences sales efforts, the locations' engagement with support functions, interaction with other locations, opportunities external to the division, and enables the evolution of the organization. Each of these will be discussed briefly. Collaboration and planning with sales will result in profitability. Vertical leaders understand local markets and client expectations.

"[I will] participate in an entrepreneurial role to develop new products and services with sales to meet new customer expectations and demand" (RV288).

They are also able to determine if an order is priced correctly and fulfills the workflow requirements needed to achieve an acceptable deliverable. Pricing is directly related to the number of steps and the effort needed for each workflow step, including material consumption. They are in the best position to influence the profitability of a purchase order. Leaders need to collaborate with support functions. This includes finance so that they can understand the performance of their
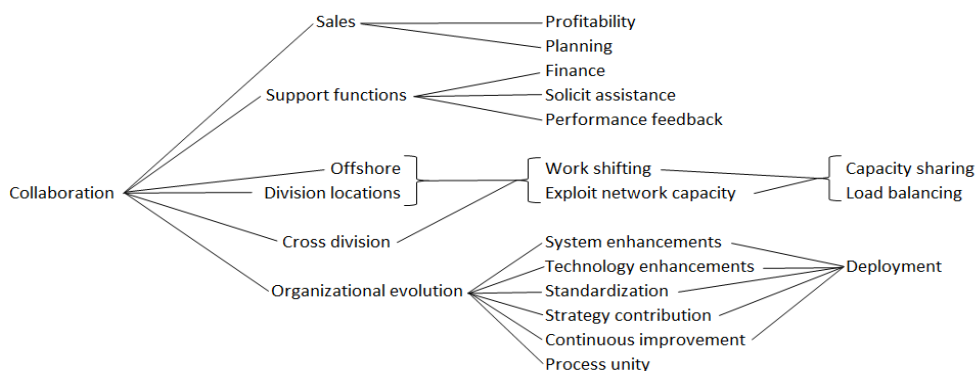
Figure 3: Collaboration theme map. This figure maps collaboration as a theme category into descriptive sub-groupings.

business unit. They may solicit assistance from any support function to minimize delays in achieving client expectations and to prepare for growth. Leaders can also solicit feedback from support functions so as to mitigate a performance or liability risk. Collaboration with other locations, including offshore locations, is critical in an environment where capacity is shared.

"[I] support the company facilities at the other locations to load balance and workload share [in] support [of] storefront activities coming out of [location], [location], and [location]" (RV294).

This collaboration enables work shifting and the exploitation of the capacity in the network of locations. The overall benefit to the organization is capacity sharing and load balancing. These resources can also be shared external to the division. Lastly, collaboration enables the evolution of the organization. This could appear in the form of system or technology enhancements.

"[I will] partner with appropriate teams to coordinate deployments and enhancements …" (RV278).

Continuous improvement in the network enables all locations to learn from mistakes made in any location. Standardization on evolving best practices creates parity within the network, enabling capacity sharing. Leaders need to deploy these enhancements according to an appropriate strategy and ensure that these enhancements are being used effectively. If there are issues or deficiencies, they can suggest further enhancements.

In summary, the data suggests that collaboration enables a networked production environment that can be used by a global supply chain. This is no surprise; however, organizations within the corporation suffer from a lack of internal collaboration. Without collaboration, organizational inertia will keep the firm from competing in a dynamic marketplace profitably. The patterns that emerged from the data included collaboration with sales, support functions, and all locations including across divisions. Collaboration with sales includes negotiating rates on projects that help ensure profitability. It also includes collaboration on the projects themselves. This related to size, complexity, and order cycle-time. Collaboration is essential for cross-business success, including contributions to the success of other divisions located elsewhere in the supply chain. Aside from collaboration with other organizational entities, it was important to vertical leaders that collaboration enabled the evolution of their organization and the firm in general. The following propositions summarize the key findings of this section:

Proposition 5 (Collaborative dependencies): Network-based production is dependent on collaboration internal and external to the MDD.

Proposition 6 (Collaborative evolution): Collaborative evolution leverages standardization as a platform for enhancement deployment.

Proposition 7 (Multidirectional collaboration): The multi-directional nature of collaboration includes offering assistance and receiving feedback on support, both of which are enabled by environmental awareness and active listening.

Contributions to Theory

The primary contribution of this article is new empirical insights about how awareness contributes to collaboration that, consequently, enables growth realization in an MNE organized as an MDD. These results are, therefore, relevant to the achievement of sustained profitability and competitive advantage by focusing a multi-unit firm on business unit relatedness and strategic complementarity. Seven propositions were extracted from the participants instigated by a precipitated event that contribute to theory on the horizontalization of an MDD. These outcomes that influence change efficacy are described and useful for sustained corporate advantage.

The author has shown the propositions emerged from the data in this case study that relate to creating a collaborative culture in a multidimensional organizational design. The critical factors appear to be related to awareness and collaboration. Regarding awareness, the data suggests that awareness promotes the ability to achieve profitable growth as stakeholders are able to work shift, resolve issues, meet the needs of support functions, and achieve capacity utilization improvement. Financial information is credible, transparently reflecting performance of each business unit and product. Costs and revenue is aligned so that the metrics are viewed as having integrity and meaning. This alignment promotes the use of ratios and trend analysis that is intended to influence decision making. Financial metrics are augmented by workflow metrics that deepen the understanding of performance. To reinforce this, the proposals that emerged from the data described work assignment, issue resolution, measurement unification and the alignment of the culture.

Awareness can be the driver for collaboration. The data suggests that collaboration enables a networked production environment that can be used by a global supply chain. Without collaboration, organizational inertia will keep the firm from competing in a dynamic

marketplace profitably. The patterns that emerged from the data included collaboration with sales, support functions, and all locations including across divisions. The propositions summarized the findings that related to collaboration and included collaborative dependencies, collaborative evolution, and multidirectional collaboration.

The author anticipates that these propositions, which add to theory on a collaborative culture in a multidimensional organizational design, will stimulate further research as organizational behavior is significantly complex and situational. These observations are also meant to stimulate further thinking. By studying the distinctive features of awareness and collaboration in an MDD, the author hopes that interest has been sparked on researching the design and application of further more effective and efficient talent selection and management techniques.

Conclusion

This research attempts to contribute to organizational theory by exploring an innovative multidimensional organizational design with the advantage of collaborative opportunity exploitation in a dynamic market. In the company case, the design includes dimensions that relate to products and services, geographic locations, support functions, and clients. However, cultures have different attributes and capabilities. Their influence will vary depending on their capability and the situation. Within the cultures there is variability in team expertise and the nature of the support that is required [50]. This multidimensional organizational design is applied to a multi-unit business that includes a global value chain. The MNE must be competitively agile in its dynamic market while managing through an otherwise complex organizational construct.

The M-form has come into question with regard to its relevancy in modern MNEs [51,52]. Even Alfred Chandler [53], the economic historian from Harvard who documented the emergence of multidimensional organizations in the first half of the 20th century, suggests that culture must follow strategy to avoid inefficient results. The M-form design drives high employee costs, internal battles over resources, the lack of standardization, the lack of collaboration, and the loss of market opportunities contributing to tension about synergy exploitation. This tension needs to be resolved, at least partially, through an aware and collaborative organizational culture that involves multiple dimensions without exacerbating issues around resources and market opportunities. Furthermore, the structure needs to drive clarity and accountability which is an inherent weakness in matrix structures due to the disparate interests of multiple bosses. Further organizational design evolution is needed along with role efficacy to move MNEs from a resource-centric industrial economy, focused on exploiting tangible physical resources, to a customer-centric, service-oriented economy that is focused on exploiting intangible knowledge-based resources [54-60].

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