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Exploring the operationalization of market sensing in a higher education organization

Ashish BHARDWAJ
Singapore Management University, bhardwaja.2017@phdgm.smu.edu.sg

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ASHISH BHARDWAJ

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Ashish BHARDWAJ

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Dissertation Committee

Philip C. ZERRILLO (Supervisor / Chair)
Affiliated Professor
Singapore Management University

Shantanu BHATTACHARYA
Lee Kong Chian Professor of Operations Management
Singapore Management University

Patrick THNG
Principal Lecturer of Information Systems
Singapore Management University

Havovi JOSHI
Director, Centre for Management Practice
Singapore Management University

Singapore Management University
2023

I hereby declare that this dissertation is my original work and it has been written by me in its entirety.
I have duly acknowledged all the sources of information which have been used in this dissertation.

This dissertation has also not been submitted for any degree in any university previously.

Ashish BHARDWAJ

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ABSTRACT

Market sensing is a dynamic capability of an organization that enables management to understand the market environment and develop strategic plans that best position the organization to continue to be relevant to the marketplace and sustain an advantaged competitive position. Extant research has explored the difference between ordinary and dynamic capabilities and proposed the role of dynamic capabilities as enabling the configuration and reconfiguration of the organization's assets in response to or in anticipation of a rapidly evolving market environment, to maintain competitive advantage.

Market sensing dynamic capability has been hypothesized to consist of three key organizational processes – sensing, sense-making, and articulation of transformational response. Past research has explored a) the relationship between an organization's market orientation culture and its market sensing dynamic capability, b) the influence of the organization's learning processes and c) the role of its managers as entrepreneurs to affect the organization's market sensing dynamic capability. However, there has been limited research on the operationalization of market sensing as a dynamic capability.

Drawing on research from the fields of market orientation, dynamic capabilities and organizational responsiveness, this study proposes a model that incorporates strategic action as a component of market sensing dynamic capability, and studies

the relationship between the market sensing dynamic capability and business performance. This research introduces a strategic action variable "Experimentation" to the dynamic capability framework, and it is described in terms of two sub-components, "Exploitation" and "Exploration", to describe market-driven and market-driving strategic actions respectively, pursued by the organization. Additionally, the study examines the relationship between the proposed sub-component processes, i.e., market research, insight gathering, internal communication, shared interpretation, exploitation, and exploration respectively, and business performance.

The proposed research model was tested through a two-stage research design. The first stage was semi structured interviews with 10 business leaders at higher education organizations in different parts of the world, and the second stage was a survey instrument used to gather data from 125 managers at higher education organizations worldwide. All hypotheses were statistically supported. However, it was concluded that sense-making could be dropped as an independent variable as it did not contribute any additional predictive value to the model.

The study adds to the extant research on market sensing as a dynamic capability by proposing and investigating a strategic action orientation in the research model as part of the dynamic capability. Further, this study conceptualizes two sub-components of Experimentation, i.e., Exploitation and Exploration. The examination of the relationship between the type of strategic action and business performance and the significance of the positive relationships found is an enhancement of the theoretical frameworks posited in extant research. This research advances the case for small, calibrated actions, or experiments to adapt to or take advantage of change in the market. This practical insight is put forth as a potential mechanism for delivering superior business performance.

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Every endeavor requires inspiration. And it takes a village!

My wife Sheetal is the inspiration for my decision to study again. She walked the talk by completing her doctoral studies after working for several years, and then encouraged me in starting and staying on this journey. I paused several times, and she was always there to offer helpful advice to rekindle my interest. Thank you for believing in me and supporting me.

I distinctly recall the afternoon when I met Dr. Z (Prof. Phillip C. Zerrillo) to discuss my interest in studying further. From that first meeting to the culmination of this doctoral dissertation, Dr. Z is the reason why I could undertake this endeavor. I cannot find the words to express my gratitude for his patience, encouragement, and advice. As a true guru, he has imparted knowledge, nudged me when I lost focus, mentored me when I was unsure, celebrated my small wins, and guided me through every stage of the process. Thank you. Dr. Z!

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To my friends, Steven Burton, and Leila Guerra, thank you for the reminders to get this done!

DEDICATION

Dedicated

to

my parents Smt. Meera Sharma and Late Sh. K.S. Sharma

Thank you for all the blessings and the gift of optimism!

and to

Matix

1. INTRODUCTION

"It is change, continuing change, inevitable change, that is the dominant factor in society today. No sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be."

Isaac Asimov, in 'Asimov on Science Fiction'

"*Transient advantage is the new normal."*

Rita McGunther, in 'Transient Advantage'

1.1 Overview

The past 4 years have been a time of unprecedented and unpredictable change. The scenario of a pandemic disrupting and redefining life and business had been the subject of a few works of dystopian science fiction but was never here to fore realistically considered a scenario around which strategic plans were made.

However, disruption is not a new phenomenon. This is evident from the fact that only a handful of organizations have remained relevant and profitable over the long term. A study by the American Enterprise Institute states that '*only 10.4% of the Fortune 500 companies in 1955 have remained on the list during the 64 years since in 2019, and more than 89% of the companies from 1955 have either gone bankrupt, merged with (or were acquired by) another firm, or they still exist but have fallen from the top Fortune 500 companies.*'

There is no doubt that we are in an environment of constant change. Therefore, a few questions are important for each organization to address:

1. How can the organization be prepared for change so that it remains relevant and competitive?
2. Are there any capabilities that the organization can develop to identify and understand the impact of change to its business?
3. Are there actions or prescriptive steps the organization can or should take to respond to change?

To remain competitive over time, a company's management must understand the macro changes in the multiple domains that touch its business such as the economy, geo-politics, technology, competition, the environment, regulation, and society. These macro changes have catalyzed numerous other changes that impact consumers and therefore, organizations.

Technology has fundamentally changed how consumers access information, impart and gain knowledge, work, and spend their leisure time. It has also been credited for upending entire industries and creating entirely new ones. Technology has enabled the sharing of ideas at a scale that has never been seen before and expanded dramatically the interfaces through which a consumer experiences a product or service.

Simultaneously, the nature of investment funding available to organizations has changed dramatically. Venture capital funds, sovereign wealth funds, and private equity firms offer funding mechanisms and possess investment horizons that are significantly different from previous equity or debt markets. This has spawned innovation across industries as ample capital is now available to support the development of breakthrough value propositions.

The pace of change is not likely to abate and being able to identify the changes taking place in the environment is vital for an organization's performance. Is that adequate? Change would affect individuals and teams in the organization differently, based on their experience and evolution. How should organizations build alignment about the implications of the change for the organization and determine the correct course of strategic action in response to or to take advantage of the change?

Much management research has focused on disruption and outlined that the survival and success of an organization depends on its ability to gather superior insights about the market, make sense of the same, and act faster and more effectively than competitors to achieve superior business performance. It has been emphasized that an organization's management must understand which of their products and services were relevant as is, which needed to be reconfigured to meet customer needs, and where there was the opportunity to create new products and services by acquiring new resources and or deploying current resources differently. Taken a step further, theory has suggested that it was not enough to have a culture of market orientation as an intent; organizations needed to build the capability to sense the market, make sense of market changes, and act to address the changes that represented the greatest opportunities or threats (McGrath and Macmillan, 2009).

The model of innovation to sustain competitive advantage was proposed as comprising three processes – discovery, opportunity qualification, and realization of the value – and access to VRIN (Valuable, Rare, Inimitable, Non-substitutable) resources, sound management strategy, and alliances with partners were identified as key enablers of the process (Loewe and Chen, 2013). Further research on innovation strategies to deliver superior business performance has suggested that returns from making multiple small investments in innovation, i.e., the pursuit of multiple competitive strategies rather than making a single large investment in innovation, i.e., the pursuit of a single competitive strategy, are likely to be higher. Products from Apple and Amazon, both seen as breakthrough in their respective categories, had benefited from a similar strategy of a series of small but meaningful innovations made over time (Corstjens, Carpenter & Hasan, 2018).

In the current VUCA (Volatile, Uncertain, Complex and Ambiguous) environment, a sustainable competitive advantage might not exist for the long term and an organization should constantly sense the market, evolve its strategy, develop new or re-configure existing resources and deploy the same to outpace competition. This might still offer only a series of temporary advantages over time due to the challenge in sustaining innovation (D'Aveni, Dagnino &Smith, 2017). This was anecdotally evident in the data point that a small number of organizations had remained leaders or even relevant in their industry for more than two decades. A

2016 report by Innosight titled '*Corporate Longevity: Turbulence Ahead for Large Organizations*', mentions (*page 2, para2*) that "*corporations in the S&P 500 Index in 1965 stayed in the index for an average of 33 years. In the 1990s, the average tenure in the S&P 500 had narrowed to 20 years and is estimated to shrink to 14 years by 2026. At the current rate of disruption, about half of today's S&P 500 firms will be replaced over the next 10 years as we enter a period of heightened volatility*."

Indeed, how to sustain a competitive advantage has been a topic of great discussion as management consultants constantly preach that today's advantages will be the state of play tomorrow and that what brought you here will not get you to where you want to be in the future. This constant pressure to improve suggests that the organization must consider pursuing multiple innovation strategies depending on the range of competitor actions, and environmental changes it must guard against.

The importance of market sensing capability to an organization's business performance in this environment of constant, and perhaps accelerating, change is what has made me choose this as the topic of my study.

1.2 The Higher Education Industry

While researchers have compellingly argued for the need to adapt to the changing market environment by reconfiguring existing resources and or acquiring new resources, the development of practice along these lines has not been uniform across industries. In my experience of working in higher education, specifically business education, I have realized that higher education organizations have been slow to evolve their strategies in response to the change in the market environment, as compared to organizations in other industries. This does position the higher education industry as an outlier, and perhaps one that is ripe for disruption.

There has undoubtedly been some process innovation in the education industry, as cost-based budgetary issues have become evident, but these do not yet represent a significant pivot in strategy. Therefore, there does seem to be a general awareness of the need to respond to the changed environment, but it is not clear that this is understood across the organization. Perhaps, the process of creating awareness about and building broad consensus around the response is not in place. Or the awareness is there, and a consensus has been reached, but there is a gap in decision making to commit to action, and the process has stopped at the point of analysis.

Is there a sense of security in the perception that higher education is a necessity and there will always be robust demand for it? Do higher education organizations feel they are protected from market forces due to their somewhat unique governance and funding model? Given the budgetary support that higher education receives from government and private sources, and the importance of human capital to the development of societies and nations, there is considerable pressure for education delivery to be more efficient and create greater impact.

Advances in technology have triggered socio-economic changes, and a priority for society, considering such changes, is the need for employment, particularly among the young (Azizi, 2023). A general sentiment is emerging that suggests reform in higher education is required to achieve relevance to employment. Failing this, the promise of education, to the individual, to industry, and to society remains unfulfilled.

Changing market demand, increasing student sensitivity to the cost, the advent of technology enabled models that deliver greater reach at a lower cost, and competition to achieve institutional viability from new sources such as corporations, begs the question: Why are higher education organizations slow to change their operating models, or perhaps more boldly worded, not proactive in adapting to the changed market environment? Exploring this question is important to me as a practitioner in the industry, and the opportunity afforded by my career provides me unique access to the leadership, faculty, and management at organizations in graduate business education to conduct this study.

2. LITERATURE REVIEW

Researchers have agreed that the organization had to prepare for constant evolution of its multiple strategies to remain competitive and financially strong, and the starting point was its ability to sense the changes (*political, economic, social, technological, environmental, and legal*) taking place in the environment, among customers, and among competitors. It was possible that despite sensing and identifying the changes, the organization did not understand the implications, and therefore was not prepared to respond. Or that despite understanding the implications, the organization chose the path that was more oriented toward better exploitation of its existing resources with greater efficiency, rather than the path of exploration based on innovation or acquisition of new resources. The approach the management decided to take would be informed by its resource base and dynamic capabilities. However, to arrive at that decision point, the organization had to possess up to date information and insight about the market, then share it with key internal stakeholders, develop a shared understanding of the implications, and collectively evaluate the strategic pathways available to address the implications.

The summary of the research on innovation in an environment of change to sustain or gain competitive advantage outlined the notion that an organization's ability to understand the trends in the market environment and take advantage of them was influenced by developing a market orientation as the cornerstone of its culture, and honing market sensing as a key dynamic capability.

Based on this insight, I focused my study of extant research to further understand the concepts of Market Orientation and Market Sensing.

2.1 Research on Market Orientation

Narver and Slater (1990) suggested that while it was widely believed that market orientation had a positive impact on business profitability, there was no valid measure of market orientation and an absence of understanding about its impact on business profitability. Building on the premise that sustainable competitive advantage was required to deliver superior business performance, the authors defined market orientation as the '*organizational culture that leads to the necessary behaviors required to deliver superior customer value, which is the basis of continuous superior business performance*'.

Narver et al (1990) identified 3 components of market orientations as:

1. Customer orientation: knowing all about the current and future needs of customers. A customer orientation puts the needs of the customer at the center of their market efforts.
2. Competitor orientation: knowing all about the current and future capabilities of competitors.
3. Inter-functional coordination: integrated working of all functions in the organization to utilize resources to offer goods and services that are relevant to, and valued by, customers.

The authors outlined two decision criteria for assessing the impact of market orientation:

1. Long term focus
2. Profitability

In their study, the authors sought to demonstrate construct validity for market orientation, while also finding support for convergent validity (*strong correlation between the 3 components of market orientation*), discriminant validity, and concurrent validity, by studying different strategic business units (SBUs) which included commodity businesses, specialty businesses and distribution businesses.

Narver et al (1990) also considered in the study other factors that could potentially influence business profitability:

1. Market level factors:
    a) Buyer power: buyer power in the industry was inversely correlated to the profitability of the organizations in the industry. It was indicative of the ability of customers to negotiate better terms such as driving down the price that could be charged by the organizations in the industry.
    b) Supplier power: supplier power in the industry was inversely correlated to the profitability of the organizations in the industry. It was indicative of the ability of suppliers to negotiate better terms such as driving up the input costs that were paid by the organizations in the industry.
    c) Seller concentration: seller concentration in an industry was beneficial to an organization if it was part of the largest organizations in the industry and therefore positively correlated to the profitability of such an organization. It was indicative of the organization’s ability to engage in monopolistic / oligopolistic profit maximization behavior.
    d) Entry barriers: low entry barriers in an industry were beneficial to competitors who find the industry attractive and could therefore enter at

will. It inversely correlated to the profitability of organizations in the industry.

e) Rate of technological change: the rate of technological change in an industry represented the opportunity to innovate and create value for customers and was therefore negatively correlated to the profitability of organizations in the industry.

2. Organization level factors:

a) Relative size advantage: an organization that had relative size advantage vs. other organizations in the industry could, all else being equal, enjoy greater business profitability. Therefore, there was a positive correlation between the relative size advantage an organization enjoyed and its business profitability.

b) Relative cost advantage: an organization that had relative cost advantage vs. other organizations in the industry could, all else being equal, enjoy greater business profitability. Therefore, there was a positive correlation between the relative cost advantage an organization enjoyed and its business profitability.

Narver et al (1990) found that there was likely a U-shaped relationship between market orientation and business profitability. The highest market-oriented businesses were likely highly customer focused and therefore realized the advantages of differentiation. The lowest market orientation businesses were likely highly standard in their offering, efficiency driven, and therefore realized cost advantages. This was a significant finding for two reasons.

1. At a high level it presented the set of strategic choices available to an organization as:
   a) be market oriented, understand the current and future needs of current and future customer segments, and use that knowledge to innovate to maintain or grow profitability,
   b) be highly efficient and cost focused in serving customer segments at scale and use that to maintain or grow profitability.
2. It defined market orientation as a set of behaviors along a continuum and posited that the extent to which an organization had market orientation was determined by the industry it was part of and the environment.

In the 1980s or the 1990s, organizations in an industry could have managed to sustain without a commitment to market orientation; however, over the past 20 years, with the environment being reshaped significantly by technology, demography, geopolitics, globalization, and capital, no industry or organization could hope to survive without market orientation as a culture and best practice. Fast following, cost-based strategies have been hard on the innovators calling for greater attention to the business model as discussed by Shervani and Zerrillo (1995). Thus, it appeared that market orientation was a measure not in an absolute, but a relative sense.

The study by Narver and Slater (1990) was widely acknowledged as the starting point of the research in the field of market orientation. It provoked significant subsequent research into the construct of market orientation, its components, its antecedents, its implications, and its relationship with organizational learning and strategic human resource management.

Kohli and Jaworski (1990), in their first in-depth study on the concept of market orientation, started by describing market orientation as the '*implementation of the marketing concept*' and provided this definition:

'*Market orientation is the organization wide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organization wide responsiveness to it*.'

The authors posited that while extant literature had described the marketing concept in detail, it had not yet touched upon the activities to implement it. In their study, they made use of a purposive sampling approach for field interviews and covered 3 key segments – marketing managers, non-marketing managers, and senior management resources. Their sample was diverse and included large and small, and different types of marketing organizations. In addition, they interviewed academicians related to the field. The authors found that the manager's view of market orientation was different from the academic view of market orientation in terms of:

1. Customer focus: The manager's approach offered a view that was broader than the academic view and included a focus on market intelligence.

2. Coordinated marketing: The manager's approach focused on coordination related to gathering and utilization of market intelligence and called for a sharper view of the market.
3. Profitability: The manager's approach considered profitability only an outcome and not a component of market orientation.

Therefore, Kohli et al (1990) opined that market orientation was better defined as:

1. Market intelligence gathering**:** about customers and the forces acting on them, about current as well as future needs.
2. Market intelligence dissemination: formal and informal, and with particular focus on the importance of horizontal communication.
3. Responsiveness of the organization: extent and velocity of the actions taken by the organization to take advantage of the opportunities or defend against the threats identified in the market intelligence.

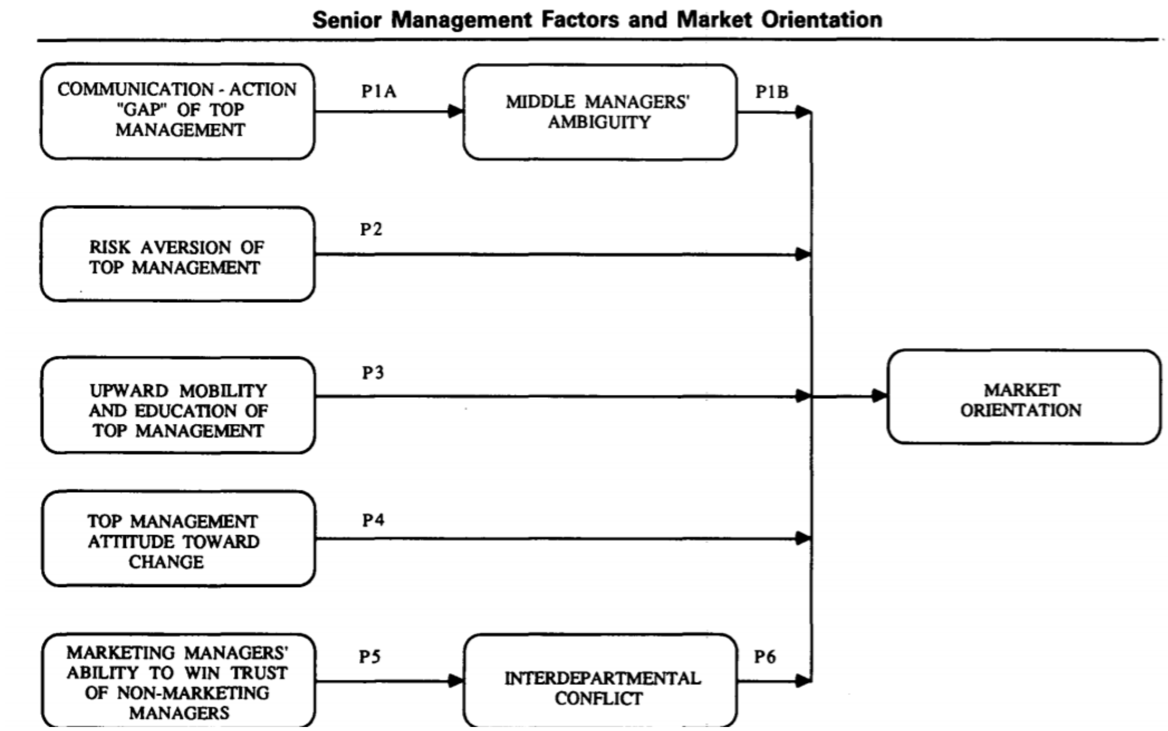
The authors also identified the antecedents to market orientation:

1. Senior Management factors:
    a. *Communication – action gap of top management* led to ambiguity for middle management in pursuing market orientation.
    b. *Risk aversion of top management* led to hesitation in the organization in committing to market orientation.
    c. *Upward mobility and formal education of senior managers* was related to their willingness to pursue innovative strategies and therefore encouraged market orientation in the organization.

d. *Top management attitude toward change* being positive led to greater market orientation in the organization.

e. *Marketing managers' ability to convince non marketing managers* reduced inter-departmental conflict and led to greater market orientation in the organization.

This was presented as a flow-chart in the article as shown below:



(Source: Fig.2, page 8 from Kolhi, A., & Jaworski B. (1990). Market Orientation – The Construct, Research Propositions, and Managerial Implications. Journal of Marketing, 54(2), 1–18. https://doi.org/10.2307/1251866)

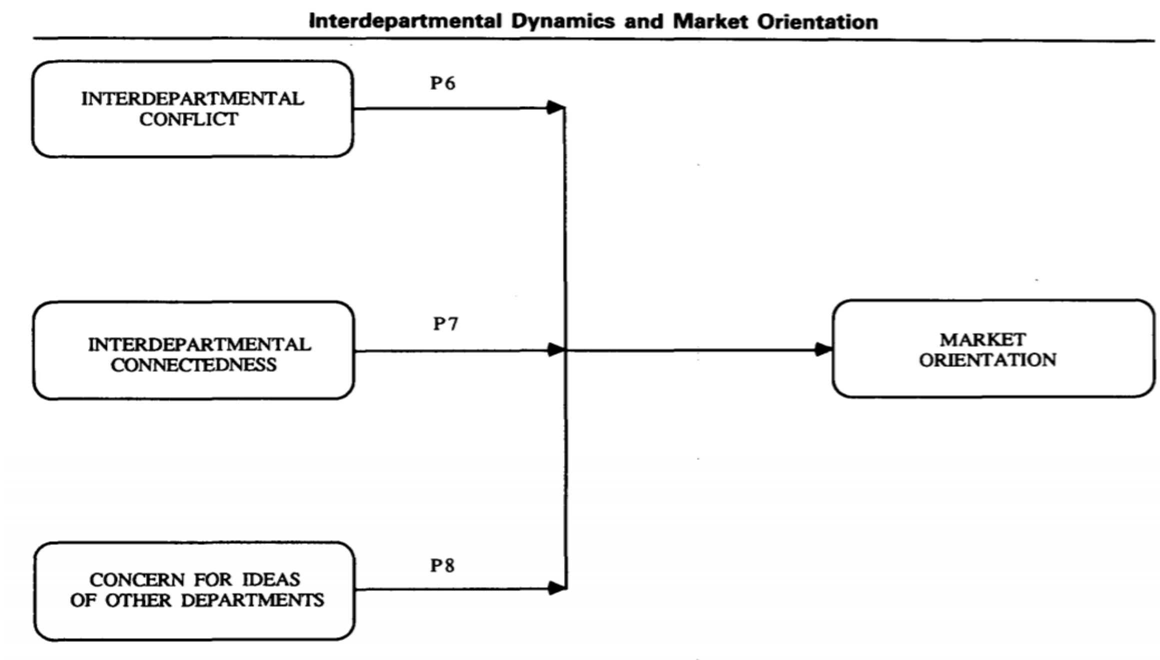
2. Interdepartmental dynamics:

   a. Interdepartmental conflict inhibited market orientation.

   b. Interdepartmental connectedness enabled market orientation.

c. Concerns for the ideas of other departments reflected the willingness to consider and trust information provided by others and therefore enabled the dissemination of market information and market orientation.

This was presented as a flow-chart in the article as shown below:



(Source: Fig.3, page 10 from Kohli, A., & Jaworski B. (1990). Market Orientation – The Construct, Research Propositions, and Managerial Implications. Journal of Marketing, 54(2), 1–18. https://doi.org/10.2307/1251866)

3. Organizational systems:

a. Departmentalization had different effects on different stages of innovation behavior; it inhibited market intelligence generation, dissemination, and design of response i.e., the elements of market orientation, but it enabled implementation of the response.

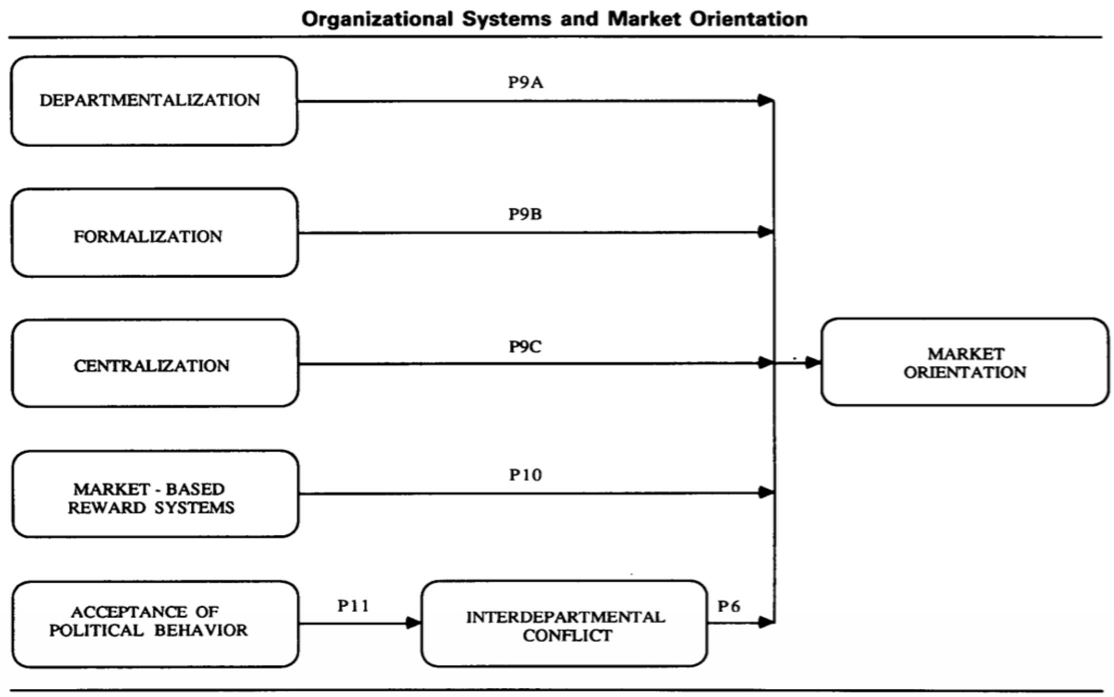
b. Formalization had different effects on different stages of innovation behavior; it inhibited market intelligence generation, dissemination, and design of response i.e., the elements of market orientation, but it enabled implementation of the response.

c. Centralization had different effects on different stages of innovation behavior; it inhibited market intelligence generation, dissemination, and design of response i.e., the elements of market orientation, but it enabled implementation of the response.

d. Market based reward systems encouraged long-term thinking on part of managers and incentivized the creation of market centric strategies; therefore, such reward systems enabled market orientation.

e. Acceptance of political behavior encouraged interdepartmental conflict, which inhibited market orientation.

This was presented as a flow-chart in the article as shown below:



(Source: Fig.4, page 11 from Kohli, A., & Jaworski B. (1990). Market Orientation – The Construct, Research Propositions, and Managerial Implications. Journal of Marketing, 54(2), 1–18. https://doi.org/10.2307/1251866)

Kohli et al (1990) identified the under mentioned linkages among the components of market orientation:

1. The source of market intelligence being an expert and being trustworthy could help in the dissemination of the market intelligence and the responsiveness of the organization.
2. The degree to which the market intelligence challenged conventional thinking and long held beliefs in the organization could impede the dissemination of the market intelligence and the responsiveness of the organization.

3. The degree to which the market intelligence aligned with the political environment in the organization impacted the dissemination of the market intelligence and the responsiveness of the organization.

The authors opined that because of market orientation, the organization's focus became sharper and more consistent. This led to better business performance, greater employee commitment to the success of the organization, and better job satisfaction, therefore led to higher customer satisfaction and retention.

However, the relationship between market orientation and business performance was moderated by several environmental factors:

1. Market turbulence: more the market turbulence, stronger the relationship between market orientation and business performance
2. Technological turbulence: more the technological turbulence, weaker the relationship between market orientation and business performance
3. Competition: more the competition, stronger the relationship between market orientation and business performance
4. State of the economy: weaker the economy, stronger the relationship between market orientation and business performance

This study, based on a broad cross-section of industries, provided evidence to support a definition and provide guidance about the construct of market orientation, how it could be fostered in the organization by bearing in mind the organizational factors that influence it, the outcomes of market orientation, and the environmental factors that moderated the relationship between market orientation and business profitability. This seminal study provided the foundational theoretical framework for future studies of market orientation and firmly established the value of organizational processes, defined in future studies as Dynamic Capabilities, beyond the value of resources, in achieving sustainable competitive advantage.

Day (1992) argued that the role of marketing in informing strategy had reduced over time. The author outlined the key issues being faced by strategy development in the early 1990s and explored how marketing might be able to address some of these issues. The author stated that in the face of rapid change in the environment, and consequently the ongoing need to learn about customers and competitors, the ability of an organization to deliver superior performance required that all functions, and not just the marketing function, be market oriented in their approach. This brought marketing as a function closer to strategic planning, as a key enabler of the organization's competitive advantage.

Touching upon the issues being faced by strategic planning, Day (1992) shared that the top-down approach to strategy development had been challenged as strategies recommended by central and senior staff had not worked from an implementation standpoint. Conventional wisdom supported the development of strategy by managers who were closer to the market.

The author identified the 3 distinct phases in the of development of the field of strategy:

1. In the 1st phase of development, the focus of strategy was on the outcomes of the strategy, e.g., growth in market share.
2. In the 2nd phase of development, the focus of strategy was on the positional advantages of the strategy, e.g., leveraging manufacturing excellence to deliver better quality or to bring costs down.
3. In the 3rd phase of development, the focus of strategy was on understanding the sources of strategic advantage, e.g., better understanding of customers, leading to creation of superior products and experiences.

Day (1992) stated that the new age organization, characterized by constant real-time exchange of information with consumers, the growing importance of channels as touch points for consumers, and the increased cooperation between competitors, required the role of marketing to be more strategic and less functional. With growing focus on delivering superior value to consumers, organizations sought to better understand the source of competitive advantage and market orientation was a key enabler for that.

This research was part of a growing body of literature that brought to light the loss of strategic marketing's prominence as a theory of strategy that would enable the organization to gain competitive advantage. Therefore, the key contribution of this research was to provide evidence in support of the value of market orientation as a source of strategic advantage. Its goal was to prompt future research that would focus on empirically validating the framework it had outlined and investigate the processes whereby market orientation could lead to competitive advantage.

Jaworski and Kohli (1993) explored three questions; why some organizations were more market oriented than others, what was the effect of market orientation on employees and business performance, and was the linkage between market orientation and business performance dependent on the environment? The three-part conceptualization of market orientation as per Kohli and Jaworski (1990) – generation of market intelligence about customer needs, dissemination of intelligence across departments, and the responsiveness (developing plans and executing plans) of the organization – provided a good framework to study the impact of internal antecedents, which was the focus of the authors.

Three internal antecedents – '*top management'* (*emphasis and risk aversion*), '*interdepartmental factors*' (*conflict and connectedness*), and '*organizational systems*' (*formalization, centralization, departmentalization, and reward system*)' were considered. Three consequences were considered – '*employee commitment', 'esprit de corps', and 'business performance*'. In studying the relationship between market orientation and business performance, three moderating factors were also considered – '*market turbulence*, '*competitive intensity*', and '*technological turbulence*'.

Results from the empirical study provided evidence that market orientation was related to business performance regardless of the environmental context. Results also showed a strong relationship between market orientation and employee commitment. Both top management factors – '*emphasis*' and '*willingness to take risk*' – were found to be positively related to market orientation. The analysis also indicated that a market orientation was strongly related to interdepartmental factors

– '*conflict*' and '*connectedness*'. '*Conflict*' impeded market orientation while '*connectedness*' facilitated it. Results showed a negative relationship between '*centralization*' and market orientation, but the study did not show any clear evidence of the relationship between '*formalization*' and market orientation, and '*departmentalization*' and market orientation. The use of market-based reward factors had a strong positive relationship with market orientation.

The study furthered the understanding of market orientation as a concept that was significantly impacted by internal factors such as the top management, the alignment between departments which was likely achievable through shared goals, and the degree of formalization in the organization. The finding about the strong relationship between market orientation and employee commitment was interesting as it indicated that there was some positive relationship between an organization's efforts to improve customer satisfaction and the perceived employee satisfaction.

The relationship between market orientation and business performance being strong regardless of the environment underscored the importance of market orientation, and its external validity, as a culture or behavior that was important to develop regardless of the degree of change in the environment and the competitive situation. It would be insightful to research the mechanism of the influence of market orientation on business performance i.e., the process by which organizations operationalized market orientation.

Sinkula (1994) stated that extant research had focused significantly on organization learning and separately, on the use of marketing information in the organization.

However, even though an organization's learning could have an impact on how market information was used to create market knowledge in the organization, this had not been studied. Building on the work of researchers such as Cyert and March (1963) and Argyris and Schon (1978) related to the process of organizational learning and how individual learning was one of the critical factors that enabled it, the author defined organizational learning as '*the means by which knowledge is preserved so that it can be used by individuals other than its progenitor*'.

Drawing a parallel between organizational learning and sensing + sense making, the Sinkula (1994) defined market information processing as the acquisition, sharing, shared interpretation and storage of market information. The author explained that the process of market information gathering in small or young organizations was not based on strict rules, and this enabled the discovery of information that was contradictory to the organization's existing understanding. Such information was therefore most valuable to the organization and represented '*higher order learning*'. Over time, as the organization's memory was richer based on its learning routines, the task of market information gathering also became more routinized and rules based. This presented two disadvantages – first, such a process was less likely to yield information that was contradictory to existing knowledge and second, even if such knowledge was generated, it was likely to meet greater resistance from managers since they had established learning routines and rules that tended to be confirmatory in nature.

The author posited that it required conscious effort on the part of organizations to remain committed to market information gathering that was more exploratory and less routinized. This took different shapes in different organizations – for instance, some organizations did not outsource market research while other organizations deployed market research more for problem discovery rather than problem solving. Sinkula (1994) drew a distinction between organizational learning that was focused on the market vs. organization learning that was internally focused:

1. Market focused organizational learning was usually a precursor to internally focused organizational learning,
2. Market focused organizational learning enabled competitive advantage,
3. Market focused organizational learning required external rather than internal focus,
4. Market focused organizational learning was a resource in that it was not easy to replicate or access since a large part of it resided among decentralized personnel and part of it was codified in routines that were causally ambiguous and socially enabled, and
5. Market focused organizational learning required an important process of shared interpretation prior to it becoming a part of the organizational memory.

The author posited that the need for and supply of market information was rarely in balance. Therefore, the importance of market information was the highest at a time when the need exceeded the supply. This situation was characteristic of a startup organization, and or at a time of environmental turbulence, and or at a time of significant technological disruption for a going concern.

Sinkula (1994) concluded that organizational learning – acquiring, sharing, interpreting, storing - was predicated on what organizations already know. There were four important contributions of this research paper:

1. It provided a framework of organizational learning that was like market sensing and sense-making,
2. It outlined the challenges to organizational learning as an organization grew and became mature,
3. It specified the differences between market focused organizational learning and internally focused organizational learning and identified market focused organization learning as a resource, and
4. It highlighted situations in which the organization's need for market information was the highest.

Slater and Narver (1994) sought to understand if the dynamics of the environment influenced the impact that market orientation had on business performance and to build on two prior studies:

1. Day and Wensley (1988) contended that the emphasis of market orientation – competitor orientation or customer orientation – could vary depending on the competitive environment i.e., in stable, slow growth market, an organization might choose to focus its intelligence gathering efforts on competitors, while in turbulent, high change markets, its focus might be on customers.
2. Kohli and Jaworski (1990) posited that the degree to which market orientation influenced business performance varied depending on the competitive

environment i.e., in a high demand environment, the influence of market orientation on business performance was weaker.

To structure their study, the authors edited and restated the hypotheses tested by Kohli and Jaworski (1990). Similarly, they reframed the definition of competitive environment used in the Day and Wensley (1988) study along 4 parameters:

1. Market growth
2. Buyer power
3. Competitor concentration
4. Competitive hostility

Slater et al (1994) found that the competitive environment did not influence the relationship between market orientation and business performance, either in terms of the focus of market orientation or in terms of the strength of its influence. They argued that market orientation was a long term, on-going and substantial resource commitment to being aware of what the market needs were, and this capability could serve the organization well regardless of the changes in the environment. Of course, depending on the environment, managers chose to focus less or more on customers vs. competitors or vice versa for operational reasons. However, this flexibility underscored the importance of market orientation to delivery of superior business performance and sustainable competitive advantage.

The key contribution of this study was in settling the debate about whether market orientation was a rough-weather practice, or a core culture or behavior espoused by the organization.

Drawing on the theory of organizational learning, Slater and Narver (1995) proposed that a market orientation mindset facilitated learning about customers and competitors, but it was organizational structure, processes, climate, and culture that enable this learning to become a competitive advantage.

The authors outlined the different types of organizational learning:

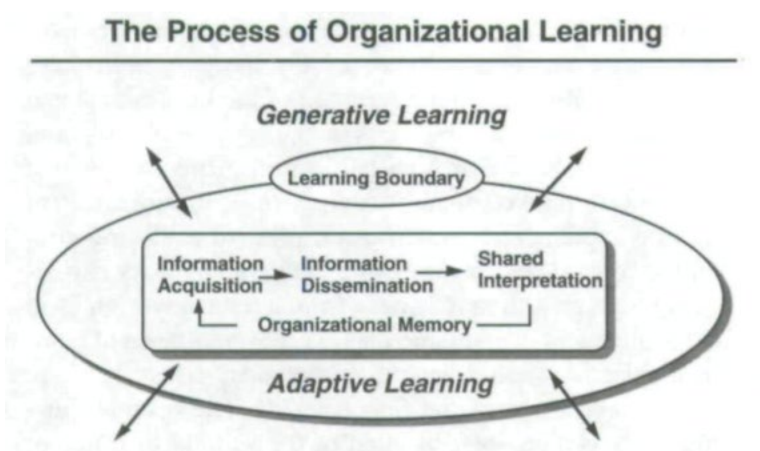
1. Adaptive learning, i.e., learning within a set of constraints; it tended to be sequential, incremental, and defined by the scope of the organization and could mean that managers missed out on opportunities that seemed out of scope.
2. Generative learning, i.e., learning that took place when the organization questioned assumptions about its business, customers, capabilities, and strategy; it generally redefined the frame and provided stronger competitive advantage vs. adaptive learning. However, while generative learning led to stronger competitive advantage, it was eventually nullified as competitors copied the innovation.

Drawing on the work of Sinkula (1994), the authors outlined the process of organizational learning:

1. Information acquisition i.e., *learning from experience* – exploitation or exploration; *learning from others* – strategic alliances, networking, through customers, via education and training; *organizational memory* – codifying knowledge through information systems and operating procedures; however, building in the flexibility to enable unlearning to prevent learnings from becoming core rigidities,

2. Information dissemination i.e., *removing functional silos* that impede the wide sharing of information and the flow of feedback to the source of the information,
3. Shared interpretation i.e., *consensus after allowing for disagreement*, and creating processes for sharing contrary views and thereafter, for conflict resolution.

This is presented in the article as shown below:



(Source: Fig.1, page 66 from Slater, S., & Narver, J. (1995). Market Orientation and the Learning Organization. Journal of Marketing, 59(3), 63–74. https://doi.org/10.2307/1252120)

Slater et al (1995) opined that organizational learning influenced behavior, which led to performance improvement:

1. *Action-oriented use*, i.e., the direct use of knowledge to address a problem.
2. *Knowledge enhancing use*, i.e., the use that reshaped perspective; subtle and could change behavior over time.
3. *Affective use*, i.e., the use that enabled acceptance of a change; this had the least direct impact on behavior.

Articulating the relationship between organizational learning and competitive advantage, the authors stated that learning enabled the organization to know about customer needs (current and future) before the competition and build products and services faster to meet this customer need. Learning also buffered the organization from the changes in its environment as it enabled the organization to:

1. Already be aware of the changes, and proactively work to address them.
2. Work closely with customers and suppliers, and with their help adjust to unanticipated changes.
3. Be inherently flexible, able to pivot and deploy resources where and when needed to address the change / opportunity.

Therefore, superior ability to learn enabled faster anticipatory action and allowed the organization to capture unique insights that made it possible to pursue a wider set of opportunities. Due to the social complexity involved in the processes enabling this competence, imitation was harder.

Slater and Narver (1995) discussed how '*Culture*' and '*Climate*', as defined by Deshpande and Webster (1989) enable the learning organization:

'*Culture***'** is '*the set of values and beliefs that provide the norms for behavior. Examples include*:

1. Market orientation and
2. Entrepreneurship

The authors explained the concept of market orientation as *the culture that placed the highest priority on the profitable creation and maintenance of superior customer value and provided norms for behavior related to the organizational development of and responsiveness to market information*.

The authors defined Entrepreneurship as *learning from exploration, taking risks, encouraging generative learning, and development of new behaviors based on learning.* Entrepreneurs successfully identified gaps in the market to create value for the customer and themselves, did so faster than competition, and used the profits thus created to find the next opportunity to create value for the customer and themselves.

To avoid falling into the trap of serving the obvious market and therefore missing out on key developments outside the market that impact it, it was important to redefine the market to include all entities / knowledge sources that at the time and, in the future, could impact the customer. This definition of the '*behaviors related to the organizational development of and responsiveness to market information*' and the '*learning from exploration, taking risks, encouraging generative learning, and development of new behaviors based on learning*' proposed by the authors mirrored the dynamic capability of market sensing and its components.

'*Climate*' is '*how organizations operationalize culture and includes the structures and the processes that enable the desired behavior*'. *Examples include*:

1. Facilitative leadership
2. Organic and open structure

3. Decentralized approach to planning

According to the authors, '*Facilitative leadership*' provided *a compelling vision to motivate the organization*, created a learning climate that encouraged the members of the organization to understand the interrelationships (people and processes) that delivered value, communicated effectively about the business, the competition, and the environment; and helped in unlearning conventional practices that were no longer helpful.

Slater et al (1995) defined '*Organic structure*' as *a structure that was a mix of the functional (function focused) and divisional (market focused), which enabled quick information sharing and decision making*. This included the use of project teams led by experts rather than hierarchical leaders. Leveraging learning partners – customers, suppliers, network partners – was another essential mechanism to gain insights about the market and made these insights accessible to all stakeholders speedily to make decisions.

Explaining '*Decentralized strategic planning*' as *a hybrid of top-down strategic vision combined with bottom-up execution of the vision as best fit the changes in the environment*, the authors outlined its two components:

1. *'Rational – comprehensive model'* of planning is *the traditional model and assumed a stable environment in which assumptions could be extrapolated*. This was generally a top-down planning model.

2. The opposite of this was the '*emergent model*' of planning which *considered the dynamic nature of the environment and enabled the strategy to evolve* in response to the change in the environment.

Another important aspect of the planning system was a process to challenge assumptions about the business and its environment. This was important since long held assumptions could take the shape of '*core rigidities*' (Hamel and Prahalad (1994)**, '***Competing for the Future'*; Leonard-Barton (1992)**, '***Core Capabilities and Core Rigidities: A Paradox in Managing New Product Development*') that prevented the organization from flexing its core competence. Here, the role of market sensing was critical in reshaping the perspective of the organization about the environment, its customers, and competitors, thereby enabling the organization to rejuvenate its learning and renew its core competence.

Harris and Ogbonna (2001) studied the interrelationship between market orientation and Strategic Human Relationship Management (SHRM) and their impact on organizational performance. An external – focused culture based on understanding external market needs was defined as a market-oriented culture. An internal – focused culture based on human resource policies that were consistent with organizational strategy was the basis of Strategic Human Resource Management.

Researchers were broadly of the view that market orientation was directly linked to organizational performance. At the same time, while researchers agreed that SHRM was linked to organizational performance, they pointed to the lack of empirical evidence to understand this relationship. The gap in explaining the linkage between SHRM and organizational performance could be explained due to the existence of mediating variables.

Harris et al (2001) concluded that Strategic Human Resource Management was an antecedent of market orientation, and that its relationship with organizational performance was indirect, and mediated by market orientation. In sum, the authors concluded that SHRM could influence organizational performance not just because of the quality of its internal policies, but also because of its market focused policies.

The authors posited that market orientation as a culture mediated the relationship between SHRM, an internal policy, and business performance. Did market sensing as a practice, a process, or a dynamic capability, mediate the relationship between market orientation and business performance? This could be an insightful area of future research.

Hult and Ketchen (2001) built on the debate in the late 1990s about the benefits of developing a market orientation based on meta-analysis of extant research:

1. Christensen and Bower (1996) found that the power of dominant customers led to the failure of leading firms since they disproportionately focused on their largest, highest margin customers at the cost of other, lower margin customers who drove market redefining innovation to serve their needs.
2. Slater and Narver (1998) articulated a distinction between customer orientation and market orientation, stressing that market-oriented firms took a long-term

view and sought to meet customer’s latent needs, and not just their expressed needs.

3. Connor (1999) posited that organizations must choose a careful balance between customer orientation and market orientation since it was current business performance that funded future business plans.
4. Slater and Narver (1999) acknowledged that the benefit of market orientation to an organization was a phenomenon that was still to be fully explored and understood. The authors proposed that market orientation, entrepreneurship, innovation, and organizational learning collectively represented a unique resource – positional advantage – that influenced performance.

The authors’ findings indicated that market orientation influenced performance, however not linearly but as part of multiple inter-related factors. The study did not explore the relationship between market orientation and the constituents of positional advantage, and this was recommended as an area of future research. The authors defined positional advantage as a form of sustainable competitive advantage and market orientation as a behavior or aspect of culture, same as entrepreneurship, innovativeness, and organizational learning, that was positively related to it.

Agarwal, Erramilli and Dev (2003) studied 201 international hotels to examine the relationship between market orientation and the subjective measures (*service quality, customer satisfaction and loyalty, employee satisfaction*) and objective measures (*occupancy rates, gross operating* profit, market share) of organizational performance. The authors posited there was a need of empirical evidence for the relationship between market orientation and organizational performance, and the likely reason that compelling evidence had not been found in past studies was that it was an indirect linkage, mediated by innovation.

Agarwal et al (2003) drew a distinction between judgmental performance and objective performance. The objective of their study was to determine if market orientation was positively associated with innovation, judgmental performance and objective performance; innovation mediated the relationship between market orientation and judgmental performance; innovation mediated the relationship between market orientation and objective performance; innovation was associated with judgmental performance and objective performance; judgmental performance mediated the relationship between market orientation and objective performance and between innovation and objective performance. The measures of judgmental performance considered were service quality, customer satisfaction and employee satisfaction.

The authors found support for their hypotheses that market orientation was positively associated with innovation, judgmental performance, and objective performance. Support was also found for the hypotheses that innovation mediated the relationship between market orientation and objective performance; and that innovation was positively associated with judgmental performance and objective performance. Finally, the results supported the hypotheses that judgmental performance mediated the relationship between market orientation and objective performance, and the relationship between innovation and objective performance.

Like other studies that articulated a positive linkage between market orientation and the customer's and employees' perception of the organization, and a positive linkage between market orientation and organizational learning, this research validated the positive relationship between market orientation and judgmental performance and innovation respectively.

The other interesting insight from this research was the importance of the elements of judgmental performance such as customer satisfaction, employee satisfaction and customer service as mediators of the relationship between market orientation and objective performance. Market orientation that did not positively influence the elements of judgmental performance was unlikely to enhance organizational performance and therefore it was important to study how the practice of market orientation could influence these elements.

Foley and Fahy (2004) reflected on the work of Narver and Slater (1990) and opined that while subsequent research had focused significantly on building the concept of market orientation further, not enough attention had been paid to identifying what leads to market orientation and how managers could make their organizations more market oriented. The authors argued that while the Resource based view of strategy specified that a combination of assets, capabilities and isolating mechanisms drove superior organization performance, it did not address the question of how to identify the capabilities and did not explain how they led to competitive advantage.

Building on the Dynamic Capabilities approach, the authors identified Market Sensing as the capability that helped the organization focus on market changes and deliver superior business performance. Foley et al (2004) raised the question about examining the relationship between market orientation and learning orientation. They posited that there were significant similarities between the two constructs:

1. Both sought to understand organizational cultures and norms.
2. Both involved interdependencies between people and the use of resources.

This paper's contribution was significant in its articulation of the market sensing capability as comprised of Learning Orientation, Organization System, Marketing Information, and Organization Communication.

Wei and Atuahene-Gima (2009) posited that reward systems moderated the relationship between market orientation and new product performance. The authors conducted their study on 290 high tech firms in China engaged in new product development. In examining the prevailing reward systems for new product development, the authors found two broad categories: risk-taking strategies, and long-term oriented strategies.

Based on this, the authors hypothesized that:

1. *The lower the risk-taking awards, the better is the new product performance.*
2. *The higher the long-term oriented awards, the better is the new product performance.*

Reviewing the extant literature on market orientation, the authors also hypothesized that:

3. *The higher the level of market orientation, the better the new product performance.*

Considering the impact of risk-taking reward on individual behavior in terms of prevention of personal financial loss, the authors hypothesized that:

4. *The lower the risk-taking rewards, the stronger the link between market orientation and new product performance.*

Results from the study suggested that market orientation complemented by reward systems enabled better new product performance. Wei et al (2009) concluded that alignment between the marketing strategy and human resource strategy of an organization could help to deliver better new product performance, which in turn could lead to competitive advantage.

This study added to the extant literature that expressly pointed to the importance of the linkage and alignment between outside-in processes or orientation of the organization and inside-out processes or configuration of the organization, to achieve superior business performance. As an example, if the reward systems were internally focused, even if the organization had strong market orientation, it would face challenges in creating the right impetus for the exploration or exploitation actions required for making new products successful.

A limitation of this study was that its context was a high power-distance and collectivist social system such as China. It was suggested that a similar study in a low power-distance and individualist social system such as the USA would provide additional insights. Another valuable area of future research highlighted was to understand how awards offered to CEOs and TMT members were related to new product performance, and if such rewards could only be related to outcomes i.e., product performance, or the process as well e.g., creating a culture of market orientation.

2.2 Research on Market Sensing

Eisenhardt (1989) studied 8 micro computer firms to understand how executive teams made decisions in high velocity environments and explored the relationship between speed of decision making and business performance. Extant research provided varied arguments such as:

1. Being comprehensive in making decisions delayed decision making, or
2. Centralization and restricting participation speeded decision making, or
3. Reduced conflict speeded decision making

The author argued that extant research missed two real world issues i.e., overcoming anxiety associated with decision making, and maintaining quality while prioritizing speed.

Using multiple case design, Eisenhardt (1989) conducted the study in the micro-computer industry and data from the study indicated support for these hypotheses:

1. The greater the use of real time information, the faster the speed of strategic decision making: The author pointed out the difference between real time information, which kept executives updated on the business, and planning information, which helped in forecasting. The advantage of real time information was in early identification of challenges, support in development

of strong business intuition among executives, and the development of causally ambiguous group decision making behavior in the executive team.

2. The greater the number of alternatives (sequential and simultaneous) considered, the faster the speed of strategic decision making: The author posited that it was difficult to consider a single course of action without having multiple alternatives to evaluate against. In addition, with multiple options to consider, management teams did not become inextricably vested in one and remained flexible to the decision they would finally make. The author stated that considering multiple alternatives provided a 'next best' solution in case the best one was not possible to execute, and the additional option to blend two or more options to arrive at the one most feasible to execute, given the constraints. It was also posited that in situations of time constraint, broad rather than deep decision making enabled superior performance.
3. The greater the use of counselors, the faster the speed of strategic decision making: Data studied from the research showed that CEOs who made faster decisions used a two-step approach. They sought the views of their senior management as the first step, and in the next step, sought the counsel of their most experienced senior managers, who could be considered 'counselors'. Due to their significant experience, counselors could help in the ideation process and expedite the generating of alternatives. In addition, counselors brought the perspective of past decisions and outcomes to the executive team, and this provided confidence to the team. The author also stated that centralizing

decision making did not avoid the challenge of indecision or anxiety that affected individuals in a similar way as it affected groups.

4. The greater the use of techniques to address conflict, the faster the speed of strategic decision making: Research findings showed that teams that made faster decisions used a two-step approach to resolve conflict. In the first step, an effort was made to achieve unanimous support among the executive team for the decision and if this was achieved, the decision was made. However, if there was disagreement among the executive team, the CEO, or the executive whose team would execute the decision made the decision. This method enabled faster decision making as it was organic and not dependent on external factors such as deadlines. In addition, while all executives wanted their views to be heard, they also wanted a decision to be made, despite disagreement, so they could start executing speedily. The author drew the distinction that snap decisions that were made in view of a deadline might not be fast decisions if the process was not detailed and informed by organic group think rather than a deadline.
5. The more integrated the decisions, the faster the speed of strategic decision making: The research found that executive teams that made fast strategic decisions aligned with past strategic decisions and with tactics, so their decision making was part of a continuum rather than an isolated decision. Aligning with past strategic decisions provided a mechanism to evaluate alternatives. In addition, aligning with tactics gave confidence to the executive teams about the action orientation of the decision. The author posited that this alignment was

not accomplished through complex analysis, but by using mental maps and supported by operating plans to gain confidence about execution.

The study found support for the hypotheses that the faster the speed of strategic decision making, the better the organization's business performance in a high velocity environment. The author argued one reason that slower decision making led to weak business performance in a high velocity environment was that it slowed down learning for managers, and the second was that opportunities shifted quickly while the organization could not capitalize on them.

Eisenhardt (1989) summarized three key effects of faster strategic decision making:

1. Faster development of cognitive processing on the part of managers
2. Streamlined group processes, which were causally ambiguous
3. Stronger confidence in action orientation

While the study focused on micro computer firms as their environment was considered as high velocity, in the current environment of accelerating change and uncertainty, these insights would be applicable to all industries.

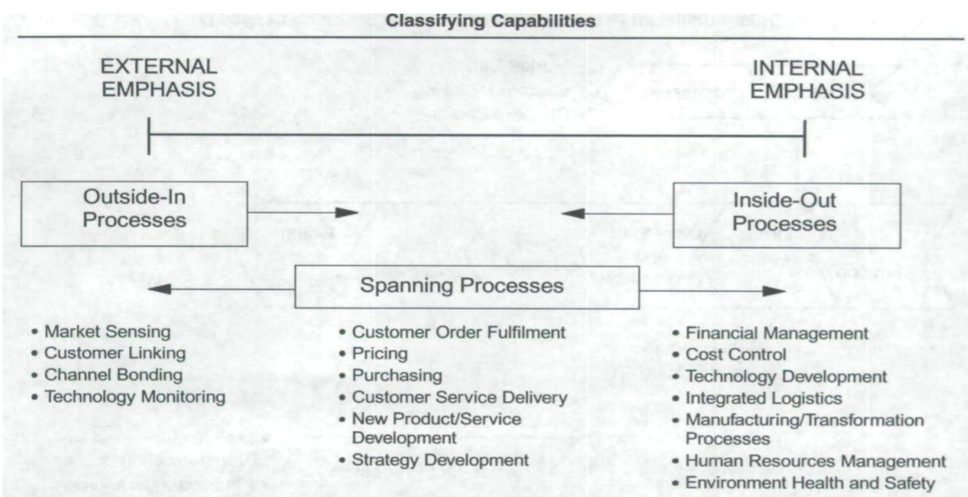
Day (1994) stated that market driven organizations needed to be good at market sensing and customer linking capability. The author provided a classification of capabilities in a market driven organization:

1. Inside-out capabilities**,** i.e., based on market requirement and enabled the organization to compete (product management, product development)

2. Outside-in capabilities, i.e., anticipated the market before competitors and established relationships with customers, channel members and suppliers (marketing, business development, supply chain)
3. Spanning capabilities, i.e., integrated the inside-out and outside-in capabilities (strategy development, pricing)

The author touched upon the role of spanning capabilities defining them as horizontal processes that helped to match inside out and outside in capabilities. If this matching was done well, spanning capabilities could become distinctive capabilities and provide a sustained competitive advantage. The author argued that distinctive capabilities resisted imitation and could be used flexibly to address the changing environment.

This is represented below:



(Source: Fig. 2, page 41 from Day, G. (1994). The Capabilities of Market-driven Organizations. Journal of Marketing, 58(4), 37–52. https://doi.org/10.2307/1251915)

Day (1994) suggested that successful market driven organizations had market sensing and customer linking as distinctive capabilities. The author argued that market driven firms:

1. Anticipated changes quicker and better than competitors
2. More accurately predicted the market response to their actions
3. Acted on information in a coordinated and timely manner

To develop the capabilities of a market driven organization, an organization engaged in a series of steps:

1. Diagnosed current capabilities
2. Anticipated the future need for capabilities
3. Committed to bottom-up redesign of underlying processes
4. Provided top-down direction and support to the change process
5. Facilitated continuous monitoring of progress

While the authors' findings supported their hypotheses, they suggested that future studies could explore the sustainability of distinctive capabilities, diagnose the market sensing capability of an organization (enablers, moderators, and mediators), diagnose the customer linking capability of an organization (which customers, why, how, in what conditions), and understand the causes of market driven behavior.

Eisenhardt and Martin (2000) explained the complementary nature of the Resource Based view (internal to the organization) and the Structure and Strategic Positioning view (external to the organization) of strategy. To address this, the authors introduced the debate about the value of the Dynamic Capabilities view of strategy.

One the one hand, it was seen as vital to describing how assets and knowledge could be reconfigured by the management team of an organization to sustain its competitive advantage in a rapidly changing environment, and thereby added a dynamic perspective to the Resource Based view.

On the other hand, the Dynamic Capabilities view was critiqued for not having adequate empirical grounding and some researchers argued that competitive advantage could not be sustained in a rapidly changing environment. In this paper, the authors sought to settle this debate and advance the theory of the Resource Based view.

Eisenhardt and Martin (2000) outlined their observations about dynamic capabilities:

1. Comprised specific strategy processes such as product development
2. Supported by significant empirical research, and possessed homogeneity and substitutability across organizations
3. Varied by degree of dynamism in the environment, e.g., in a slow change environment, manifested as routines, while in a fast change environment, manifested as experiential processes leading to adaptive execution

The authors argued that dynamic capabilities enabled asset and resource reconfiguration for serving the current market (market driven approach) or shaping a new market (market driving approach). In either scenario, dynamic capabilities were required to create competitive advantage, but the real driver of the sustained competitive advantage was the act of reconfiguration, not the dynamic capabilities. The authors defined dynamic capabilities as '.... *organizational and strategic routines by which organizations achieve new resource configurations as markets emerge* ...' and touched upon the factors that influenced the evolution of dynamic capabilities:

1. Learning mechanisms guided the evolution, e.g., repeated practice helped in gaining knowledge and confidence. Thereafter, formalizing the same through codification helped in communication and replication. The role of small mistakes, rather than successes or big mistakes, in learning was vital since it focused managerial attention without creating the defensive behavior triggered by big mistakes.
2. Pacing of experience guided the evolution, e.g., extant research showed an inverted U-shaped relationship between the pace of experience and the evolution of dynamic capabilities. Experiencing too fast gave managers no opportunity to assimilate and learn, and experiencing too slow could make managers forget what they'd learned.
3. Rate of change in the market guided the evolution, i.e., moderate rate of market change was most conducive for the evolution of dynamic capabilities as it enabled managers to gain experience and expand it gradually due to exposure to frequent small variations in the environment.

Eisenhardt et al (2000) concluded that competitive advantage could be gained by using dynamic capabilities sooner than competitors to achieve the resource configuration that would address the market need. In a constantly evolving environment, this advantage would be temporary and require constant reconfiguration to sustain; hence outlining the importance of dynamic capabilities.

Day (2002) extended his previous research on capabilities by studying the activities that successful organizations pursued to anticipate and prepare for changes in the market. The author broadly categorized the market learning process into three steps:

1. Collection and distribution of market information or “sensing” (reactively or proactively)
2. Interpretation of the market information or “sense making” (identify and understand patterns, validate predictions against actual market events)
3. Addition of this market information into the organization’s memory or storing

The author stated that it was important to ask customers about the problems they were facing, or better still, observe how customers were behaving, rather than asking customers about the solutions they needed. The objective of market learning was not just to follow customer and market trends, but to anticipate them and evolve the organization’s strategy accordingly.

The author posited that sensing was about opening the organization’s mind to the opportunities in the market, threats from competitors and the environment, and the understanding of how the market would respond to the organization’s strategy. The commonly used methods were:

1. Open minded enquiry

2. Analyzing rivals' actions
3. Listening to front line staff
4. Seeking out latent needs (*problem identification, storytelling, observation, understanding customer economics, attentive listening*)
5. Scanning the periphery for insight / information
6. Encouraging experimentation (*experimental mindset needs culture and process for curiosity and experimentation, tolerance of well-intentioned failures and process for learning from failures*)

Day (2002) outlined the process of sense making i.e., sorting the information gathered through sensing into coherent patterns and developing mental models that could be understood through the organization. However, the author acknowledged that mental models could become rigid, represent the biases of a select group of individuals, and thereby lead to traps such as:

1. Myopic decisions
2. Self-fulfilling prophecies
3. Foreclosed options

To prevent mental models from becoming traps and to be able to evolve them, they needed to be shared at a broader organizational level, debated, and discussed. This process of creating a shared interpretation of the information gathered from the market was an integral part of sense making.

The author argued that even with great sensing and sense making processes, there was still the need to create a knowledge base for the organization where all the insights could be stored, updated, and made available to the organization. With the sharing of updated market know-how across the organization, it started to anchor the organization's strategy.

Day (2002) outlined the most comprehensive definition of the market learning process hitherto offered. However, this definition – consisting of processes related to sensing, sense making and storage of knowhow – was still not complete since market learning would be incomplete without committing to the behavior of developing strategic plans based on market knowhow and implementation of the same in the market through experiments. Extending the author's broad definition of market learning – sensing, sense making, storing – to include action or experimentation based on market knowhow, would define the market sensing capability more completely, and offer an exciting area of future research in dynamic capabilities as a source of competitive advantage.

Day (2003) further elaborated on his prior research on the market learning process by introducing the concept of customer-relating capability, which enabled organizations to outperform competitors based on their ability to stay closer to their customers by relying on 3 organizational components:

1. Orientation
2. Configuration
3. Information

Orientation (*like the concept of 'outside-in processes' in the author's 1994 research paper*) referred to customer satisfaction being the priority of everyone in the organization, and not just of the sales or marketing function.

Configuration *(like the concept of 'inside-out processes' in the author's 1994 research paper*) referred to metrics, incentives and structure and alignment between them such that the organization was oriented toward building better relationships with customers.

Information (*like the concept of 'spanning processes' in the author's 1994 research paper)* referred to updates about customers and their interactions being available to everyone in the organization with the help of technology.

The author drew the distinction between orientation of the organization being internal i.e., towards self (*operating efficiency is an example*) vs. being external i.e., toward customers (*providing customers the services the products and services they need at the right place, time, and price*) and posited that a critical success factor in changing the orientation of the organization was the emphasis and commitment demonstrated by the leadership. Similarly, different configurations – product or function focused vs. customer focused – resulted in different abilities to understand and meet customer requirements.

Day (2003) argued for a market orientation in not just the outside-in processes or orientation of the organization but also in the inside-out processes or configuration of the organization. If this could be achieved and the organization ensured that information about the customer was available to all parts of the organization, it could create a superior relating capability. In this research, the author introduced customer relating capability as a concept but did not relate it to competitive advantage. An interesting area of future research could be the study of customer-relating capability combined with action, i.e., experimentation and its relationship with business performance.

Teece (2007) stated that difficult to replicate (VRIN – Valuable, Rare, Inimitable, Non-substitutable) assets alone were not adequate for sustaining competitive advantage in a fast-paced environment with global competitors driving innovation through a myriad set of enablers. Difficult to replicate assets had to be combined with dynamic capabilities to ensure that assets continued to be relevant to the changing environment. Dynamic capabilities could be in three parts:

1. Sensing and shaping opportunities and threats
2. Seizing opportunities
3. Remaining competitive through reconfiguration of assets

Building on the dynamic capability of *sensing and shaping of threats and opportunities*, the author argued that this could take an analytical, i.e., research-based, or creative, i.e., discovery-based approach. The former enabled the organization to understand customers, partners, and competitors over the known business horizon, while the latter enabled the organization to understand, and perhaps even lead customers, partners, and competitors to a more distant business horizon, by uncovering latent needs and anticipating future market structures.

Teece (2007) posited that the dynamic capability of *seizing opportunities* was challenging to build since it involved decision making about investment – where, when, and how much – and a choice about:

1. Business models (and related product architecture) – A sound business model articulated:
   a) the technology and features offered in the product
   b) the revenue and cost structure
   c) how to assemble the technologies
   d) the market segments to target
   e) where and how to create value
2. Selecting enterprise boundaries – Enterprise boundaries enabled organizations to maximize value from their innovation by:
   a) being aware of the legal protection available to their innovation
   b) knowing the set of assets leveraged to create the innovation
   c) knowledge about the access that competitors have to the same set of assets
   d) understanding the stage of evolution of the industry
   e) the degree of integration and the intent to create integration in the organization
   f) controlling the assets critical for continued innovation
3. Managing platforms – Creation of platform approach required organizations to:
   a) view products as systems of interdependent components
   b) determine which components to outsource to free up vital resources for critical activities

c) make complementary investments to gain extendable benefits
d) make decisions about which components to manufacture by self and which components to source from partners
e) devote significant resources toward the management and success of the platform

4. Avoiding bias and hubris – Organizations could avoid making incorrect decisions by:
    a) building organization structures and incentives to reward actions that created new markets
    b) developing routines to question frameworks that were no longer of value

Explaining the dynamic capability of *reconfiguration*, the author stated that success created routines that supported path dependent strategies and resistance to change, in favor of efficiency and continuity. The organization could build a process of responsiveness to the changing environment through:

1. Decentralization and near decomposability: creating an organizational structure of multiple divisions rather than functions enabled quicker decision making while potentially creating challenges for integration, which could be managed through better coordination across the middle management.
2. Managing co-specialization: the commitment to achieve fit between strategy and process, and complementarity between assets or complementarity between innovations was key to achieving reconfiguration.

Teece (2007) explored the importance of learning and governance in developing dynamic capabilities. Developing knowledge and the skills to combine knowledge and assets could be a capability of an organization or a capability it acquired in partnership with a network of other organizations, e.g., vendors and partners. Integration and governance were required to ensure that the process to achieve this was in place. In addition, unique knowledge and assets required protection as intellectual property. Alignment of incentives to promote sensing and seizing was another example of the governance required to develop dynamic capabilities.

The author outlined that all organizational responses to the opportunities and threats in the environment were not dynamic capabilities, and proposed a framework for measuring dynamic capabilities:

1. Technical or internal fitness: how well the capability performed its intended function
2. Evolutionary or external fitness: how well the capability enabled the organization to perform

Teece (2007) posited that resources and competences could lead to technical fitness which could enable an organization to do well in its line of business through a commitment to operational excellence. Dynamic capabilities, on the other hand could lead to evolutionary fitness, which would allow an organization to shape the market and gain competitive advantage, due to its ability to sense, seize and reconfigure. The author stressed that evolutionary fitness could not be achieved without operational excellence; however, operational excellence combined with strategic management was a dynamic capability that led to innovation.

Olavarrieta & Friedmann (2008), explored the antecedents of superior business performance with the intent of outlining the role of knowledge related resources through research on a sample of Chilean publicly traded companies. The authors sought to build on the work of researchers in two schools of thought:

1. *Resource Based View* (access to rare, unique, inimitable resources)
2. *Theory of Evolutionary Economics* (learning, discovery, adaptation, strategic choice)

The authors' model proposed that a firm's knowledge-based resources – market sensing capability, imitation capability, organizational innovativeness – and its reputation assets – corporate image and brands – mediated the effect of its market orientation culture on its performance. In instances where organizations sought to develop their presence outside their national markets, the results of this study were even more important as there was complexity, risk and reward associated with developing the culture and capabilities that enabled the organization to understand new markets. The study found that the role of reputation assets i.e., building a corporate image and brands that connected with consumers, was an essential complement to dynamic capabilities in achieving superior business performance.

An important contribution of the study was evidence of the relevance and complementarity of both market-oriented culture and knowledge-based resources – market sensing capability, innovation capability and imitation capability – to new product performance and overall firm performance. The study therefore underscored the importance of developing a market-oriented culture and encouraged managers to develop dynamic capabilities such as market sensing. A future area of research based on these findings could be to understand the relationship between knowledge-based resources and reputation assets of an organization.

Day (2011) argued that it was no longer feasible for most organizations to keep up with the complexity and pace of change in their environment. Continued evolution in customer needs leading to multiplication of customer segments, explosive growth in channels / touch points of customer interaction – physical, virtual (*web, social, virtual reality*), and the always-on nature of engagement (*active and passive*) in the digital world was creating an unmanageable information overload for marketers.

To address this, the author posited that organizations had to adopt adaptive marketing capabilities built on outside-in, real – time insights about customer needs, commit to constant experimentation to anticipate these needs and deliver superior value, and build alliances with partners whose skills – social media, technology, data analytics – were essential to the organization's well-being.

While technology was a key enabler, the more important enablers were a commitment to:

1. constant market sensing through formal and informal mechanisms,
2. developing processes to socialize insights and fight organizational inertia and skepticism, especially in the instance of weak / ambiguous signals that did not fit the conventional narrative, and

3. build new value propositions and a culture that celebrated failure in the pursuit of ideas that delivered superior value to consumers.

Wei and Wang (2011) posited that the organization's performance was not just a function of the strategic resources of an organization but also the strategic actions of the organization. The authors stated that, in the context of marketing strategy, '*sensing*' and '*sense making*', if they were unique to an organization and complex in nature, could be defined as strategic resources. Leveraging the information and insights gathered through these strategic resources, organizations could make resource allocation decisions to:

1. Respond to the market (*market driven action*) with its current resource configuration, as an example of strategic action
2. Pursue an innovation strategy where an organization reconfigured its resources to create unique and differentiated value for the market (*market driving action*), as another example of strategic action

A market information system, which included the gathering of information about the market and sharing of that information across the organization, could be a strategic resource. The technology used in gathering and sharing market information could be part of a strategic resource, but not a strategic resource by itself, since it was not unique, unless it was proprietary.

Wei et al (2011) conducted their research on a sample of 180 Chinese companies. Their findings supported the hypotheses that strategic resources and strategic actions both had a positive relationship with competitive advantage. A key contribution of the study was the finding that strategic actions partially mediated the impact of strategic resources on competitive advantage, and organizations could take a range of strategic actions – *market driven and market driving* – to gain competitive advantage based on their strategic resource, which in the instance of the study was a market information system.

Bharadwaj and Dong (2014), proposed to disaggregate the approach that an organization's market sensing capability, which they defined as *customer focus*, could impact the customer's perception of the organization's performance, which they defined as perceived *customer value*, by introducing two constructs that represented the routines associated with *customer focus*:

1. *Market learning activities*: a set of embedded skills and routines through which the organization learned about the customer and the environment
2. *Customer-oriented practices*: the culture with respect to customers that existed in the organization

In addition, the authors evaluated the moderating influence of *customer performance standards* on the relationship between the two constructs respectively, and perceived *customer value*. They posited the under mentioned hypotheses:

1. *The degree to which a selling firm exhibits market learning activities has a positive effect on perceived customer value*
2. *The degree to which a selling firm exhibits customer-oriented practices has a positive effect on perceived customer value*

3. *The more demanding the customer's performance standards, the stronger the effect of market learning activities will be on perceived customer value*
4. *The more demanding the customer's performance standards, the stronger the effect of customer-oriented practices will be on perceived customer value*

Their findings showed that *market learning activities* and *customer-oriented practices* were individually related to perceived customer value. Bharadwaj et al (2014) found that the customer's performance standards did not moderate the relationship between market learning and perceived customer value. This was an important finding that supported the need for market learning activities regardless of the performance standards of the customer.

Teece (2014) sought to address the linkages between the resources, capabilities frameworks and strategy. The author began by defining:

1. *Capability: activities that used the organization's resources to deliver products or services*
2. *Ordinary capabilities: activities that delivered administrative, governance, or operational tasks*
3. *Dynamic capabilities: activities that delivered higher value outcomes by deploying the organization's resources to the changing needs of the environment or customers*

The author posited that capabilities were related to an organization's history, its resources, and its learning. In that sense, they defined what an organization could accomplish, and not what it currently was.

Dynamic capabilities enabled the organization to utilize resources to create differentiated products and services and generate superior returns. However, dynamic capabilities had to be part of a firm's strategy based on sound principles and enabled by access to a unique and inimitable set of resources for superior performance to be realized.

Teece (2014) posited that dynamic capabilities provided a point-in-time competitive advantage unless their development and evolution was faster than the evolution of the market and the evolution of the dynamic capabilities of competitors. As such, a key dynamic capability the organization needed to deliver superior business performance was to build new dynamic capabilities.

From an execution perspective, the author defined 3 types of dynamic capabilities:

1. Sensing – ability to identify, communicate and assess opportunities based on customer needs
2. Seizing – ability to mobilize resources to address the identified opportunity and create value
3. Transforming – ability to combine internal and external resources and knowledge to continue to sense, seize and transform

The foundation of dynamic capabilities was laid by managerial decision making in

1. Coordination of resources
2. Learning driven by experimentation
3. Reconfiguration of resources

Teece (2014) argued that management teams had their own signature processes, which they evolved over time, and these signature processes were a form of unique resource that provided competitive advantage. Access to valuable, rare, imperfectly imitable, and non-substitutable (VRIN) resources, along with signature management processes such as the creation and rejuvenation of dynamic capabilities, could help differentiate from competitors.

The author stated that the organization must be able to exploit the current market opportunities available to it while successfully identifying and addressing new market opportunities, to compete successfully and transform itself successfully. The role of leadership and managers was critical in enabling this entrepreneurial action. Teece (2014) proposed that dynamic capabilities could be strong or weak. In the instance that they were weak, they could harm the firm's competitiveness more than inaction would. Since the crux of dynamic capabilities was to successfully drive innovation in a changing environment, they were significantly related to leadership and therefore, were hard to map or imitate in a different context and without the people who were the decision makers.

The most valuable contribution of this study was in the articulation of the linkage between resources, capabilities, and strategy. An interesting area for future research could be to explore the relationship between change in the organization's leadership and the organization's ability to create and rejuvenate its dynamic capabilities.

Teece (2016) argued that the definition of an entrepreneur as the creator of a new business, based on sensing an opportunity and developing a business model to respond, had traditionally not been applied to managers, who were seen as dependent on the organization. However, in the current environment of accelerating change, managers had to reconfigure resources to keep the organization relevant to changing customer and competitor dynamics.

While acknowledging the challenge of maintaining corporate profitability for an extended period, the author provided evidence that the survival rate of large and successful organizations had been higher than that of younger challengers who were destroyed by competitors like themselves. This was attributed to ambidexterity or the ability of an organization to pursue a new business while preserving revenue from its current business, which was part of the framework of dynamic capabilities.

Teece (2016) articulated the role of senior managers as entrepreneurs, beyond being a tool of economic theory, in three parts:

1. Role as operational manager, focused on efficiently achieving the defined business goal
2. Role as entrepreneur, focused on sensing the environment and building plans to adapt the organization
3. Role as leader, focused on executing the plan to ensure the organization took advantage of the changed environment and remained competitive

The role of entrepreneurship and leadership in an organization was identified as a dynamic capability while the role of an operational manager was identified as an ordinary capability. Therefore, the author argued that the role of the senior management (combining the 3 parts) was core to the organization's success in times of uncertainty and ambiguity.

Dynamic managerial capabilities were classified into 3 categories:

1. Managerial cognition – processes that guided decision making
2. Managerial social capital – networks (internal and external) that were critical for gaining knowledge and accessing resources
3. Managerial human capital – senior managers' contextual expertise and knowledge

Teece (2016) reiterated the key elements of entrepreneurial management:

1. Sensing, i.e., opportunity recognition
2. Seizing, i.e., devising a business model and building consensus to pursue it
3. Transformation, i.e., assessment of fit between organization and environment, and change management

The author proposed that economic analysis of the organization could be strengthened by integrating the study of managerial action, and the dynamic capabilities framework provided a good mechanism to do so.

Hunt & Madhavaram (2019) evaluated three approaches to strategy:

1. The *'adaptive marketing capabilities thought'*
2. The *'dynamic capabilities framework'*
3. The '*resource advantage theory*'

and two questions related to strategy:

1. *Where should it focus - outside in or inside out?*
2. *Whether it should be static or dynamic?*

Exploring the theories of competition on which the theories of strategy are based, and evaluating the research traditions informing the approaches to strategy, the authors provided the under mentioned framework:

Recognizing that the static nature of strategic thoughts (Resource based strategy and Industry based strategy) based on the neo-classical economics was an inherent limitation, the authors suggested considering the '*Aldersonian research paradigm*' which was related to *Austrian economics* and *evolutionary economics*, in terms of the focus on entrepreneurship, recognition of imperfect information, and dynamic competition as a learning process.

Hunt & Madhavaram (2019) quote Alderson (1957, p.101-102):

'*Each firm competes by making the most of its individuality and its special character. It is constantly seeking to establish some competitive advantage. Absolute advantage in the sense of an advanced method of operation is not enough if all competitors live up to the same high standards. What is important in competition is differential advantage, which can give a firm an edge over what others in the field are offering*.'[1]

The Aldersonian approach took shape in the 1960s as a Marketing-concept based strategy and led to the recognition among marketing managers that their role was to create the marketing strategy to serve different market segments to achieve

[1] Hunt, & Madhavaram, S. (2020). Adaptive marketing capabilities, dynamic capabilities, and renewal competences: The "outside vs. inside" and "static vs. dynamic" controversies in strategy. *Industrial Marketing Management*, *89*, 129–139. https://doi.org/10.1016/j.indmarman.2019.07.004

competitive advantage. This recognition laid the foundation for the development of Market-segmentation strategy as a theory of academic and managerial significance. The authors proposed that Market-segmentation strategy was outside-in (based on market segments) and dynamic in nature (acknowledged that market segments were heterogenous and constantly evolving). It subsequently expanded to become the Market orientation strategy, bringing into the framework the importance of understanding competitors besides understanding customers, though the goal remained the same – achievement of competitive advantage. The Market orientation strategy was also 'outside-in' and 'dynamic' in nature (based on existing and potential customers, and existing and potential competitors).

Hunt et al (2019) stated that Resource Advantage Theory best addressed the 'outside-in vs. inside-out', and the 'static vs. dynamic' controversies plaguing the theories of strategy. Still grounded in Austrian economics, i.e., it included the concepts of dynamic market and competition, and included elements of the Resource based theory starting with the market first i.e., it included the concept of product – market dynamics and subsequently, the importance of resources to address market needs faster and better than competitors to gain competitive advantage and deliver superior performance.

The Resource Advantage Theory underscored the importance of management since it was management's critical role to understand the market – customers and competitors (current and potential) – and thereafter deploy existing resources or acquire resources to be able to serve customers faster and better than competitors. In essence, the organization would not be able to achieve its goal of superior business performance if management were to fail on either dimension – '*the outside-in dimension of understanding the market*', or the '*inside-out dimension of resource deployment*'.

Hunt et al (2019) concluded that Resource Advantage strategy, Market Orientation strategy and Adaptive Marketing Capabilities strategy were aligned in recognizing the importance of:

1. Developing a market sensing system
2. Using the intelligence gathered to shape strategy
3. Committing resources to serve the market
4. Developing, deploying, and withdrawing resources flexibly

The authors provided a compelling analysis and framework for building a market first strategy while marshalling or acquiring resources to deliver superior business performance. A valuable area of future research they suggested was to study how key partners could be co-opted to commit to a similar flexible, market first strategy.

Dias & Lages (2021) touched upon the importance of market sensing capability and how it could lead to a sustainable competitive advantage. The researchers argued that in most cases market sensing capability remained restricted to environmental scanning, while to influence business performance and cerate competitive advantage, it had to include opportunity identification and provide input to the strategic decision-making process.

Building on the work of researchers in the field of entrepreneurship, the authors created a comprehensive definition of market sensing capability:

1. Scanning (analytical processes and customer relationships)
2. Interpreting (business experience)
3. Response (organizational articulation)

Analytical processes referred to routines that included scanning of the environment, the customers, and the competitors to inform decisions and included formal market research as well as informal insight gathering.

Customer relationships referred to the organization's degree of proximity to its customers and the ability and willingness to respond to their needs. Inherent in this construct was employees' orientation toward understanding and addressing customer needs.

Business experience referred to the complementary ability, creativity, and experience of the management team in interpreting the output of scanning processes and combining intuition and analysis in arriving at a decision.

Organizational articulation referred to the organization's ability to build the connection between external opportunities and internal operationalization. This required two key enablers – interpretation and knowledge absorption – and required a filtering mechanism that prevented the pursuit of non-scalable opportunities.

The authors posited that new product development success, defined as the rate of growth of revenue or margin contributed by the development of new products, was related to market sensing capability in several ways:

1. Identification of unmet needs of customers
2. Identification of areas of customer dissatisfaction with the current set of products
3. Understanding of customer sensitivity to pricing, enabling revenue growth decisions
4. Awareness of competitor value proposition enabling competitive decisions and responses

The authors hypothesized that the elements of market sensing capability – analytical processes, customer relationships, business experience, and organizational articulation – were positively related to new product development success. Based on the analysis of findings, the researchers found support for the hypotheses that the development of analytical processes, business experience, and organizational articulation enabled new product development success.

While focused on the Portuguese market, this study provided compelling evidence of the importance of market sensing capability in new product development success. The authors suggested that an area of future research was to study the relationship between market sensing capability and overall organizational performance.

2.3 Learnings from Three Decades of Research

At this point, it is important to step back and look at the chronological development of extant research in the areas of market orientation and dynamic capabilities. While the studies reviewed in this research are listed by year in Appendix 7.1, this research will attempt to summarize these findings in 10-year periods, paying attention to the topics introduced, the branch of theory from which they were spawned, and the contributions that they made.

1989 - 2000

Eisenhardt (1989) challenged extant research and based on a study of the micro-computer industry, found support for the hypotheses that faster strategic decision making enabled superior business performance in a high velocity environment. In addition, the study validated hypotheses supporting a positive relationship between the quantum of real time information evaluate, the number of alternatives considered, the use of counselors, the use of conflict resolution mechanisms, and practicing integrated decision making with the speed of strategic decision making. The findings based on a high velocity and rapidly evolving industry now have applicability across industries due to the rate of change in the environment.

Narver and Slater (1990) and Kohli and Jaworski (1990) laid the foundations of the concept of market orientation, explaining its components, its antecedents, and its potential impact on business profitability. Both sets of researchers also identified factors – environmental and organizational – that potentially affected the relationship between market orientation and business profitability.

Day (1992) built on this work by proposing that market orientation did not merely influence business profitability. Nor was it a set of behaviors about which only marketing as a function should be concerned. He suggested that market orientation was the source of competitive advantage and as such, the entire organization should be market oriented. He also posited that market orientation was a key enabler of strategy development, and that strategic marketing should rightly be accorded its place of importance as a theory of strategy.

Jaworski and Kohli (1993) strengthened the theoretical foundation and managerial implications of market orientation as a behavioral construct and enabler of competitive advantage. The most significant contribution the authors made was to empirically demonstrate the robustness of market orientation's influence on business performance, regardless of the environment, cementing the notion for managers that market orientation was a strategic and ongoing investment in building competitive advantage. The researchers emphasized the role of top management, inter departmental dynamics and organization systems in enabling market orientation, explaining the varying degrees to which different organizations practice market orientation. They also showed empirical support for a positive relationship between market orientation and employee commitment.

Sinkula (1994) defined market information processing as the acquisition, dissemination, shared interpretation, and storage of market information and posited that this was related to organizational learning. Drawing a distinction between external focused learning and internal focused learning, the author stated that external focused learning processes i.e., sensing (acquiring data and insights from the market) and sense making (rigorously reviewing the information and insights acquired and aligning on its potential implication for the firm) represented a core competence as they enabled the organization to gain competitive advantage.

Day (1994) classified capabilities of a market driven organization as outside-in, inside-out and spanning capabilities, and provided the first definition of market sensing capability in the academic literature related to dynamic capabilities by defining it as an outside-in capability. The author also identified market sensing capability and customer linking capability as distinctive capabilities for market driven organizations i.e., capabilities that could be leveraged to create a competitive advantage.

Simultaneously, Slater and Narver (1994, 1995) in studying if a competitive environment had an impact on the relationship between market orientation and business performance concluded that it did not. The authors further explored the relationship between market orientation and organizational learning by describing the process of information acquisition, dissemination, shared interpretation, and memorization as being vital to adaptive as well as generative learning in the organization. However, the authors stated that learning alone was not adequate for competitive advantage unless it impacted behavior. That is, knowledge without action had little impact.

Touching upon extant research on Culture i.e., '*values and beliefs that set the norm for behavior'* and Climate i.e., '*operationalization of culture through structure and processes that enable behavior change*', the authors provided a comprehensive framework that linked market orientation to learning, and learning to behavior through values, beliefs, structure, and processes. The authors argued that market sensing created the opportunity for the organization to learn from its market orientation and deploy this learning to influence behavior, and to gain competitive advantage. Since the market was constantly evolving, this had to be a constant process and therefore the authors classified market sensing as a dynamic capability.

Eisenhardt and Martin (2000), emanating from economic principles, advanced the Resource Based View (RBV) of strategy by articulating that the Dynamic Capabilities were seen as enablers of organizational response and competitive advantage. That is, they suggested that advantage could be gained through the configuration (and constant reconfiguration) of the valuable, rare, inimitable, and non-substitutable resources possessed by the organization, based on sound strategic principles outlined by the leadership, to achieve business performance and gain competitive advantage. The RBV approach was comprised of specific processes, based on empirical evidence, possessed homogeneity and substitutability across organizations, and was influenced by the organization's learning mechanisms, the pacing of the management's experience, and the rate of change in the environment. The study established the importance of dynamic capabilities in achieving competitive advantage through reconfiguration of assets, and not merely by the possession of assets.

2000 – 2010

Hult (2001) examined the relationship between market orientation and business performance and found the relationship was not linear. Building on the findings of Slater and Narver (1999), the author defined positional advantage, which influenced performance, as a form of sustainable competitive advantage and market orientation as a behavior or aspect of culture that was positively related to it.

Harris and Ogbonna (2001) studied the interaction between strategic human resource management and market orientation and their impact on business performance. The authors concluded that market orientation, as an external-focused culture, mediated the relationship between strategic human resource management, an internal-focused culture, and business performance. The authors therefore posited that internal policies like market focused reward systems influenced business performance if the organization committed to market orientation as a culture.

Day (2002) continued this human resource-influenced approach as he defined the market learning process as a collection and sharing of market information i.e., sensing; validation, and shared interpretation of the market information across the organization i.e., sense making; and making market knowhow accessible to the broader organization i.e., storing. This comprehensive definition based on the dynamic capabilities framework provided an insight into how some organizations consistently anticipated change and prepared for it better than competitors, or how some organizations created new businesses based on their superior understanding of the market, leading to superior business performance and a sustained competitive advantage.

Building further on the market learning process, the author introduced the concept of the firm's '*customer relating capability'* that organizations could develop by having a customer focus in not just its orientation (customer service vs. operating efficiency) but also in its configuration (customer centric vs. product centric organization structure) and its information (customer data / insight vs. internal metrics focused information systems).

Day (2003) introduced the concept of customer relating capability and posited that an organization could outperform competition by developing a superior customer relating capability based on its key components – orientation, configuration, and information. The author found that market orientation in the organization's orientation and configuration combined with the organization's ability to gather and share information about the market enabled it to build a superior customer relating capability.

Agarwal, Erramilli, and Dev (2003) studied the linkage between market orientation and subjective and objective measures of business performance respectively in service firms (hotel chains), and if this relationship was influenced by innovation. Their findings supported the hypotheses that linkages between market orientation and innovation exist. The authors also found support for the hypothesis that innovation mediated the relationship between market orientation and subjective and objective measures of business performance respectively. The authors also found in this study that subjective measures of performance mediated the relationship between market orientation and objective measures of performance. Therefore, the authors posited that market orientation that did not positively impact subjective measures of performance such as customer satisfaction and customer loyalty were unlikely to have a positive impact on objective measures of performance in a sustainable manner.

Foley and Fahy (2004) considered the similarity between learning orientation and market orientation to propose that market sensing capability was comprised of learning orientation, organization system, marketing information and organization communication. The authors further posited that market sensing as a dynamic capability was the antecedent to market orientation as a culture or behavior and its influence on business performance was mediated by market orientation. While the proposed model challenged extant research that considered market orientation as the culture which led to the development of market sensing as a dynamic capability, its contribution was significant in its exploration of what constituted market sensing capability.

Teece (2007) posited that unique assets had to be combined with dynamic capabilities to create competitive advantage. Resources and competences could lead to technical fitness which could enable an organization to do well in its existing line of business through a commitment to operational excellence. Dynamic capabilities led to evolutionary fitness, which could allow the organization to shape the market and gain competitive advantage, due to its ability to sense, seize and reconfigure. The author argued that organizational response could therefore be analytical (research-based), i.e., to understand customers, partners, and competitors over the known business horizon, or creative (discovery-based), i.e., to create new markets.

Olavarrieta, S., & Friedmann, R. (2008) proposed that the influence of market orientation as a culture on business performance – at a new product level or overall firm performance level – was mediated by its knowledge-based resources, of which market sensing capability was one – and its reputation assets such as corporate image and brands. Their study found support for their hypotheses and that knowledge-based resources such as market sensing capability, innovation capability and imitation capability, and reputation resources such as corporate image and brands mediated the influence of market orientation on new product and overall firm performance. This study made two important contributions. Firstly, it validated extant research that culture alone as a resource was not sufficient to influence business performance unless it manifested in the form of a dynamic capability such as market sensing. Secondly, by bringing reputation assets into the framework, the authors reminded marketers that reputation assets needed care and nurturing as well, especially in the context of new geographical market entry when brand and corporate image did not have a historic association with the market.

Wei and Atuahene-Gima (2009) studied organizations in the high technology sector in China to explore the moderating effect of reward systems on the relationship between market orientation and new product performance. Their results reiterated extant research that market orientation as a 'Culture' needed to be supported by the 'Climate' of organization policies to influence business performance, which in their study was measured by new product performance. While the study was conducted in a high power-distance environment such as China, leading to possible impact on how risk-taking vs. long-term oriented rewards were perceived, its implications were insightful in how organizations could structure policies and processes to enhance the influence of their market orientation on business performance.

2011 – 2021

Day (2011) touched upon the pace at which the environment was changing, the evolution of micro customer segments, the 24 x 7 nature of customer engagement enabled by technology, and the deluge of real time customer data and insight that was challenging for marketers to understand and deploy. The author posited that the organization must develop adaptive marketing capabilities, not just in sensing and sense making but also in considering small experiments that enabled it to address customer needs. This study was a step forward in the definition of marketing capabilities such as market sensing as it suggested the element of action beyond sensing and sense making.

Wei and Wang (2011) focused their research on Chinese companies and studied the role of organizational responsiveness and innovation strategy in influencing business performance. The authors classified a market information system as a strategic resource and found that strategic action – *market driven action or market driving action* – mediated its impact on competitive marketing advantage. This study provided theoretical support for a dynamic capability such as market sensing to include strategic action in its framework. The authors argued that a strategic resource such as a market information system (which could be considered as sensing + sense making) needed to be complemented by strategic action or experimentation for the organization to deliver superior business performance.

Bharadwaj and Dong (2014) defined market sensing capability as customer-focused and studied the impact of its components, (market-learning activities and customer-oriented practices) on perceived customer value i.e., differentiated competitive advantage. The authors' findings suggested that market-learning activities and customer-oriented activities individually and separately influence perceived customer value. They also noted support for the hypotheses that a customer's performance standards i.e., expectations from the consumption experience did not mediate the relationship between market learning activities and perceived customer value. The key contribution of this study was in highlighting the importance of market learning as an ongoing practice, regardless of the customer's expectation from the consumption experience.

Teece (2014) drew a linkage between resources, capabilities and strategy and posited that dynamic capabilities enabled by resources that are valuable, rare, inimitable, and non-tradeable, and guided by a strategy based on sound principles could lead to competitive advantage. However, the author argued that such a competitive advantage would not be sustainable if the organization did not have the capability of refreshing and renewing its dynamic capabilities. This was an important advance in the theoretical framework of dynamic capabilities. The author provided a taxonomy for dynamic capabilities in the execution domain – sensing, seizing, and transforming – which included elements of sensing / learning, sense-making / enabling decisions, and taking transformative action. The author further highlighted the importance of leadership in enabling the development and rejuvenation of dynamic capabilities and since the involvement of leadership in developing these capabilities was unique to each context and causally ambiguous, it represented a competitive advantage that could be sustained.

Teece (2016) posited that managers had to act as entrepreneurs in the current environment of uncertainty and ambiguity, i.e., they had to combine the role of the operational manager, the entrepreneur, and the leader, to reconfigure the organization's assets and sustain competitive advantage. Using cognition, social capital and human capital, senior managers undertook sensing, seizing and transformation strategies to keep the organization relevant to the environment. The entrepreneurship and leadership elements of a senior manager's role were identified as dynamic capabilities and strengthened the economic analysis of the organization by integrating managerial perspectives.

Hunt & Madhavaram (2019) sought to address the inside-out vs. outside-in and static vs. dynamic debate related to strategy. They posited that the different theories of strategy were influenced by the research tradition in which they were grounded; and further stated that the 'Aldersonian research paradigm' that was related to both the Austrian economics and Evolutionary economics research tradition presented the appropriate research grounding to understand the theories of strategy such as *Resource Advantage strategy*, *Market Orientation strategy* and *Adaptive Marketing Capabilities strategy* that advocated for market sensing, developing strategy based on market information, committing to experimentation, and leveraging the expertise of partners and suppliers to deliver superior business performance.

Dias & Lages (2021) argued that market sensing capability has mostly been used for environmental scanning and its role in opportunity identification and enabling decision making had not been explored. The authors defined market sensing capability as scanning (*analytical processes and customer relationships*), interpreting (*business experience of the team*), and responding (*organizational articulation*). Their study on 150 Portuguese SMEs found that scanning, interpreting, and responding strongly influenced new product development success.

2.4 Implications of the Literature Review

Based on the review of research published and a summary of theoretical frameworks developed over 30 years in the fields of market orientation, dynamic capabilities, market sensing, and the antecedents, mediators and moderators, researchers have established that a culture of market orientation and the development of market sensing as a dynamic capability could positively influence an organization's business performance.

Researchers have touched upon the role of strategy based on sound principles, access to VRIN (valuable, rare, inimitable, non-tradeable) resources, leadership that encouraged market focused thinking, management teams that espoused entrepreneurship, and market-oriented structure and processes in delivering superior business performance. It has also been discussed that a key dynamic capability that organizations must possess was to refresh and rejuvenate their dynamic capabilities to achieve superior business performance and resultantly, sustained competitive advantage.

Researchers have defined differently, over the years, the elements of market sensing and agreed that sensing, i.e., the scanning of the market for data and insights, sense making, i.e., the communication of the gathered market information and the development of a shared interpretation, and articulation of a responses, i.e., transformation undertaken by the organization in response to market information which has been understood and interpreted, are the components of market sensing capability. Researchers also broadly agree that organizations commit to market sensing inadequately. It was mostly used for environmental scanning or sensing, but the subsequent steps of sense-making and experimentation were not necessarily implemented.

A gap that emerged from the study of the models proposed in extant research is that the organizational response or transformation is not expressed in terms of strategic action or experimentation. It was also not clear from extant research that organizations deployed their market sensing capability for strategic action toward both market-driven and market driving initiatives. Extant research had posited but not provided evidence that each element of the market sensing capability influenced business performance, and this also represented a gap in our theoretical know-how about market sensing as a dynamic capability.

As a doctoral student, my goal in the proposed research is to study the relationship between the dynamic capability building steps of each – sensing, sense making, experimentation – and business performance. The proposed model developed through the research review stated herein, my professional journey in the field, and insights gathered from education practitioners will be tested through confirmatory analysis to understand the nature of market sensing with the relationship with business performance.

Recognizing the significant changes in the environment, the relative placid nature of innovation in higher education and therefore, the potential for significant disruption, as a manager in the higher education industry, I am also keen to answer the under mentioned questions through my study:

1. The degree to which higher education organizations gather information about the market – consumers, competitors, and vendors – in which they exist.
2. Do higher education organizations process the market information they gather and develop or update their view about the market?
3. Do higher education organizations use the view they have developed about the market to inform the new offerings they develop?
4. As with other industries, is business performance within higher education organizations influenced by knowledge of the market, having a view about the market based on market information, and developing new offerings based on the organization's view?

Therefore, from a practitioner's perspective, this research undertaking seeks to understand the operationalization of market sensing as a dynamic capability, the degree to which it is embraced and executed, and its impact on business performance in the higher education industry.

3. RESEARCH MODEL

Defining the goals for this research study from the perspective of a doctoral student and from the perspective of a practitioner in the higher education industry was the starting point of articulating the research model at a high level. Reflecting on my experience in the industry and learnings from discussions with numerous organizations about the changing market environment, the process of understanding the changing market, and thereafter using the insights gathered to respond, helped me to visualize the proposed research model.

In addition, I leveraged the concepts studied in the Strategy and Market course modules of my PhD program and reviewed extant research in the areas of Market Orientation and Dynamic Capabilities to frame the proposed model. Review of the research on market orientation and market sensing dynamic capability in different geographies and industries helped me to understand the research models, key variables, hypotheses, statements, and scales used by researchers in their work. I used this knowledge to inform the overall research model, variables, sub-components, hypotheses, and research process of my study.

To explore the gap in the current theoretical frameworks of market sensing, I proposed a construct more closely associated with action rather than analysis, i.e., 'experimentation', which was a change from prior research models that used 'articulation' or 'response' or 'transformation' to describe this stage of market sensing. The additional advantage of introducing 'experimentation' as a variable was that it is related to both types of actions – market driven and market driving. Besides, it is my aspiration to uncover some insights for operational managers in the industry beyond adding to theoretical knowledge in the field of dynamic capabilities.

During the presentation of the proposed high-level research model and the research process to my dissertation committee, I received vital advice on several aspects that helped to fine tune the proposed model and the proposed research process. The following were among the insights:

1. The impact of interaction effects between each element of market sensing in studying the relationship of each with business performance was discussed. It was agreed that this first study would not tackle this phenomenon and it could be an area for future research.
2. The potential trap of market sensing being perceived as 'marketing sensing', i.e., the potential error of not understanding if organizations gathered important non-marketing insights, such as information on operations and financials, and used the insights thus gathered to create consensus and execute to create competitive advantage, was discussed. As a result, specific questions to investigate these areas were proposed to be added.
3. The importance of ensuring that the study was not informed only by my own reflections as a practitioner, and to validate that this was indeed a significant problem that the industry is facing and to capture the current concerns of leaders and managers in the industry was discussed. This led to defining the first step of the research process, i.e., a semi structured interview with a sample of leaders and managers at business schools across geographies.
4. The semi-structured interviews were proposed to better identify and include:

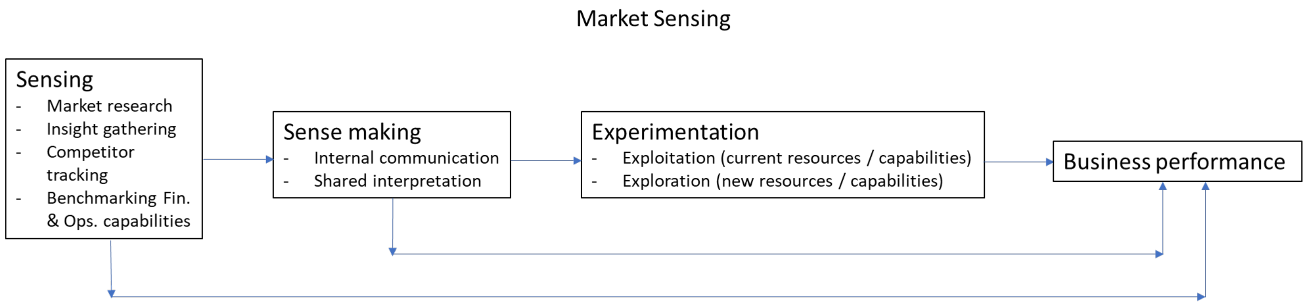
a) the key factors or variables as reported by participants, and

b) the language used by these industry practitioners to describe the problem in their own words.

This language component was proposed to be useful in the later development of a confirmatory instrument (survey questionnaire). To this end, I was advised to use transcription software such as Otter so I would be able to capture insights about commonly used phrases during the interview.

5. The challenge of defining business performance in the context of a higher education institution, considering the myriad types of higher education institutions and a wide variety of potential performance metrics. Financial performance, rankings, student satisfaction, and research output were all considered and deemed only partially relevant. The committee suggested investigating during the semi structured interviews the variables or parameters that leaders and managers considered as representative of business performance.
6. Recognizing the challenge in gathering objective or published information related to business performance, the committee agreed that subjective or perceived performance on the identified parameters, as articulated by respondents who participated in the study, could be used in the proposed model as a measure of business performance.

Proposed Research Model (Post Proposal Defense)



3.1 Research Process

3.1.1 Qualifying the research objective and sharpening the research focus

The first stage of the research process was to conduct a series of semi-structured interviews with 10 – 12 business leaders and senior managers in the marketing and non-marketing functions in higher education organizations that were geographically dispersed, to understand:

1. Their perspectives about the shifts in the market i.e., customers, competitors, partners, vendors, regulators, and other factors.
2. Whether the reported shifts in the market represented a concern for them, and if their organizations were attempting to navigate the same.
3. How did their organization capture information about changes in the market?
4. How did their organization discover information about competitors, including operational and financial information?
5. How did their organization communicate the resulting captured market information within the firm?

6. How did their organization create a shared interpretation about the market information that was captured across key internal functions?
7. How did their organization act based on the shared interpretation developed about the changes in the market?
8. How did they define business performance?
9. Were there objective performance measures or did the management compare specifically or broadly against competition?
10. That the proposed model did not leave out variables or factors considered important.
11. That the language used by industry people to share their perspectives was captured and as relevant, included in the research process to ensure relatability.

The approach to this first stage of the research was defined, as shared below:

1. Invitees for the semi-structured interviews were identified among leaders and senior managers at business schools in the US, UK, Europe, China, Australia, Singapore, and India. The goal was to conduct interviews with 10 – 12 individuals.
2. An email communication was drafted to invite their participation in the semi-structured interview, which indicated the purpose of the interaction, the estimated time commitment required, information about the voluntary nature of the engagement, consent requirements, privacy of the participants' information, confidentiality of the information they shared during the interaction, and modalities of where and for how long the information gathered would be stored.

3. Since some of the participants were based in Europe, GDPR compliance had to be borne in mind when obtaining their consent to participate in the study.

Under the guidance of the Institutional Review Board, Singapore Management University, the under mentioned documents were submitted for review and approval (refer to Appendices), prior to starting the first stage of the research, i.e., the semi-structured interviews:

a) IRB application Form
b) Research proposal approved by the dissertation committee
c) Completion report of the 2-part Collaborative Institutional Training Initiative (CITI) program
d) Template of the recruitment email for the study, i.e., semi structured interviews.
e) Participant Information Sheet and Informed Consent Form (GDPR) Hardcopy template for the study, i.e., semi structured interviews.
f) Participant Information Sheet and Informed Consent Form (GDPR) Online template for the study, i.e., semi structured interviews.
g) Participant Information Sheet and Informed Consent Form Hardcopy template for the study, i.e., semi structured interviews.
h) Participant Information Sheet and Informed Consent Form Online template for the study, i.e., semi structured interviews.
i) Supervisor Declaration Form
j) Questions for the semi-structured interview

Feedback provided by the Institutional Review Board, Singapore Management University, was incorporated, and final approval to proceed with the first stage of the study, i.e., conducting the semi structured interviews, was obtained on March 23, 2023, under Expedited Review: Category 2A. The IRB Approval Number is IRB-22-194-A034(323).

3.1.2 Semi Structured Interviews

Based on the objectives of this part of the research process, the undermentioned questions were asked during the semi-structured interview:

1. What, in your opinion, have been the key changes in the market?

   Probing comments: Let us think about the environment, your consumers, your peer organizations, new competitors, and changes in technology.

2. At a broad level, could you please share how your organization stays informed about the market changes that impact its business?

   Probing comments: What is the different type of information your organization gathers about the market? How do you stay abreast of the changes in your consumers' behaviour? Do you track your competitors' activities? Besides market activity, do you systematically gather information about the financials and operations of your competitors? Do you gather information about your vendors and your competitors' vendors? Has this changed recently? Are there new information sources being used? Is this a formal process in your organization? Who is responsible for this?

3. Please share about the processes by which the market information you gather

about the changes that impact your business are shared across the organization.

Probing comments: What is your organization's process for sharing the market information that is gathered? Has this changed recently? Are there new sharing methods being used? Is this a formal process in your organization? Who is responsible for this? Who receives this information?

4. What are the mechanisms by which your organization (its leadership and managers) determines which market information to pay attention to?

   Probing comments: What is your organization's process for determining which market information is relevant and important? Has this changed recently? Are there new criteria being used? Is this a formal process in your organization? Who makes this determination? How?

5. How does the market information that is considered relevant and important influence your organization's strategy?

   Probing comments: How does your organization use market information to inform or influence its strategy? Is this a formal process in your organization? Who is responsible for this? Do they have great influence?

6. Which organizations (including yours) in the industry are being more successful in taking advantage of the changing landscape vs. competition? Is market information a source of this competitive advantage?

   Probing comments: Who do you think has been most successful in managing change in your industry? Why? In your opinion, what are the most important reason(s) why they have been successful in doing so? Focus from leadership? Seeking information from wider sources? Organizational structure?

Responding to change quickly? Other reasons?

7. Please share an example of how your institution has evolved its existing business model (or processes) or considered a new business model (or processes) based on market information.

The email inviting participation in the semi-structured interviews was sent to a target list of 30 individuals in the under mentioned senior management or leadership roles at business schools globally:

1. Dean
2. Vice Dean
3. Senior Associate Dean
4. Associate Dean
5. Executive Director

The target list of 30 individuals included almost equal representation from the key markets – US, China, India, Canada, Europe, Australia, and Singapore. A total of 13 responses were received; however only 10 interviews could be conducted since appointments were not confirmed by 3 individuals who had initially shown interest in participating.

Only 3 of the 10 interviewees agreed to the audio recording of the interview while the others provided their consent only for notes to be taken by the investigator during the interview. Therefore, the transcription software and cluster analysis of phrases could not be conducted as envisaged. Microsoft Teams was used to conduct all the interviews. No personal identifiable information was gathered during the interview.

Three meetings were recorded based on the consent provided by the participants, and the notes were made on a MS Word document during the other seven interviews. The recordings or the notes made no mention of the participants' name or any other personally identifiable information.

The recordings and notes were stored on the investigator's laptop. Only the investigator had access to the audio recordings on Microsoft Teams through a login and password. Similarly, access to the MS Word documents containing the notes was also password protected. Access to the investigator's laptop was controlled through a lock screen requiring a password. No print outs of the data were taken since this was not required for statistical analysis or reporting of findings. The information gathered during this process and all back up files related to the same were deleted within 90 days of collecting the information, as per the data retention policy communicated to the participants, to protect the privacy of the respondents and the confidentiality of the information they provided. Key themes captured from the semi structured interviews are listed in Appendix 7.4.

The responses from most respondents during the semi-structured interviews indicated that:

1. Higher education institutions did not proactively track their competitors. In response to the probing questions, they mentioned about undertaking market research for key projects, which included gathering information about competitive offerings. They also gathered insights about the market regularly, however, this did not focus specifically on competitors or the vendors of

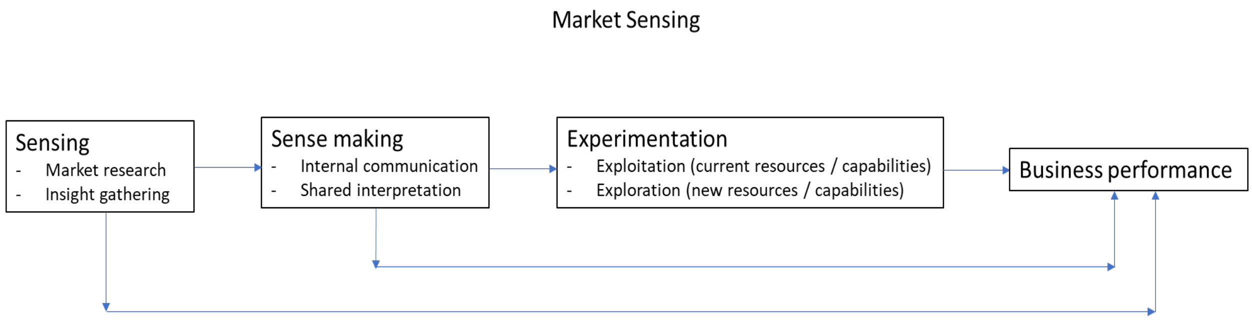
competitors. Most of it focused on consumers. Tracking the annual rankings was the only aspect of gathering insights about competitors that was mentioned.

2. Higher education institutions were not aware of the financial or operational capabilities of their competitors. They did not proactively gather information about key financial aspects such as the fees charged to students, revenue earned by major degree program types, or cost footprint in major categories such as infrastructure, salaries, technology, or marketing. They were not aware about major operational details about their competitors such as size of full-time faculty body, size of professional staff teams in areas like admission, marketing or career services, nature of support functions, new initiatives in executive education or industry collaborations, and partnerships with other institutions. In some instances, they were aware of recently launched new programs and new campus locations; however, they did not possess details about these developments.

Responses from the semi-structured interviews were used to sharpen the research model and inform the correct language to be used in communicating with potential informants during the survey process.

Based on findings from the semi structured interviews, the research model was revised to reflect the learning from the semi structured interviews:

Proposed Research Model (Post Completion of Semi-structured Interviews)



3.2 Research Objectives and Hypotheses

3.2.1 Research Objectives

The objective of the proposed research model was to study the relationship between the components of market sensing as a dynamic capability – sensing, sense making and experimentation – respectively as independent variables, and business performance as the dependent variable.

An additional objective was to study the relationship between each sub-component of market sensing as an independent variable and business performance as the dependent variable. The sub-components of sensing – market research and insight gathering – had been proposed in extant research (Jaworski and Kohli (1993) and Dias & Lages (2021)) but their relationship with business performance had not been studied. Similarly, the sub-components of sense making – internal communication and shared interpretation – had been proposed in extant research (Teece (2014) and Dias & Lages (2021)) but their relationship with business performance had not been studied.

In prior research, the third stage of market sensing as a dynamic capability had been described as the analysis of strategic options and identified as '*articulation*' or '*transformation*'. Building on the work of Wei and Wang (2011) on organizational responsiveness, the third stage of market sensing as a dynamic capability in the proposed research model was defined as 'Experimentation', a form of strategic action, rather than static analysis, as the organizational response.

In the proposed research model, the sub-components of 'Experimentation' were defined as 'Exploitation', i.e., the leveraging of current resources and capabilities by the organization, and 'Exploration', i.e., the creation of new resources and capabilities by the organization. The advantage of introducing 'Experimentation' (and its proposed sub-components) as variables was that it enabled examination of both types of organizational response – market driven and market driving.

The challenge of defining business performance in the context of a higher education institution was proposed to be addressed by using the language and parameters that leaders and managers from the industry used to define business performance, in their responses during the semi structured interviews. Leveraging prior research (Jaworski and Kohli (1993) and Agarwal, Erramilli, and Dev (2003)), feedback on subjective performance relative to competitor organizations, rather than objective performance, was proposed as the measure and was accordingly sought through the survey questionnaire.

3.2.2 Research Hypotheses

The proposed research model sought to study the relationship between key variables presented in the model:

The independent variables proposed were:

1. Sensing
2. Market research (sub-component of Sensing)
3. Insight gathering (sub-component of Sensing)
4. Sense making
5. Internal communication (sub-component of Sense making)
6. Shared interpretation (sub-component of Sense making)
7. Experimentation
8. Exploitation (sub-component of Experimentation)
9. Exploration (sub-component of Experimentation)

The dependent variable proposed was business performance.

In line with the objective of the proposed research, the under mentioned hypotheses were formulated:

1. H1a: Sensing by an organization relates positively to its business performance.
2. H1b: Market research by an organization relates positively to its business performance.
3. H1c: Insight gathering by an organization relates positively to its business performance.

4. H2a: Sense making by an organization relates positively to its business performance.
5. H2b: Internal communication of the findings from sensing by an organization relates positively to its business performance.
6. H2c: Shared interpretation of the findings from sensing by an organization, relates positively to its business performance.
7. H3a: Experimentation by an organization based on sensing and sense making relates positively to its business performance.
8. H3b: Exploitation of current resources and capabilities by an organization based on sensing and sense making relates positively to its business performance.
9. H3c: Exploration of new resources and capabilities by an organization based on sensing and sense making relates positively to its business performance.

3.2.3 Survey Questionnaire

To test the research hypotheses of this study, a survey instrument – a questionnaire – was developed. Given that several constructs in this research had been studied in previously published peer-reviewed, scales from those research efforts were sought and incorporated.

For new constructs, or those being defined differently (such as Exploration and Exploitation, the sub-components of Experimentation; and Business Performance), scales used in previously peer reviewed research were adapted for relevance, based on the language used in the industry, as learned from the responses gathered through semi structured interviews.

The new items that were developed were tested using the Gerbing and Anderson (1991) approach for substantive validity and the questionnaire was slightly redesigned based on the results of the substantive validity test. Thus, the survey questionnaire items were a mixture of generally approved research questions and those adapted for this specific research undertaking.

The final survey questionnaire consisted of 55 items. The first item asked respondents to indicate their geographical location and the second asked them to indicate their job role – marketing or non-marketing. The response to the first two items was to select an option among the response choices provided. For the remaining 53 items in the survey questionnaire, a 5-point Likert scale was used to gather responses, as was often the case in scales from prior research in the field.

Thereafter, the process of obtaining approval from the Institutional Review Board, Singapore Management University, was initiated by submitting the under mentioned documents for review, attached in the Appendix 7.8:

1. IRB application Form
2. Protocol Modification Request Form
3. Template of the recruitment email for the study, i.e., the survey questionnaire.
4. Participant Information Sheet and Informed Consent Form (GDPR) Online template for the study, i.e., the survey questionnaire.
5. Participant Information Sheet and Informed Consent Form Online template for the study, i.e., the survey questionnaire.
6. Questions from the survey questionnaire.

Feedback provided by the Institutional Review Board, Singapore Management University, was incorporated, and final approval to proceed with the second stage of the study, i.e., fielding the survey questionnaire, was obtained on August 8, 2023, under Expedited Review: Category 2A. The IRB Approval Number is IRB-22-194-A034-M1(823).

The approved questionnaire was thereafter hosted on Survey Monkey and the email invitation to participate in the survey was sent to the target list of 340 individuals working at business schools globally. To ensure consistency, relatability, and external relevance, the outreach was limited to individuals at organizations whose language of business was English, and both marketing and non-marketing managers were addressed. The list of invitees was drawn from the investigator's professional network and was comprised of 40% individuals in Marketing roles and 60% individuals in non-Marketing roles.

The target list consisted of individuals working in the under mentioned roles at business schools:

1. Manager, Admissions (and Financial Aid),
2. Associate Director, Admissions (and Financial Aid),
3. Manager, Marketing
4. Senior Manager, Marketing
5. Manager, Branding and Corporate Communications
6. Associated Director, Branding and Corporate Communications
7. Manager, Career Services
8. Director, Career Services

9. Manager, Operations
10. Senior Manager, Operations
11. Manager, International Partnerships
12. Director, International Partnerships
13. Manager, Alumni Engagement
14. Manager, Accreditation
15. Faculty
16. Manager, Programs

The geographical distribution of the invitees to the survey was:

1. North America: 20%
2. South America: 2.5%
3. Europe: 20%
4. Middle East and Africa: 10%
5. Asia Pacific excluding India: 20%
6. India: 25%
7. Australia and New Zealand: 2.5%

At the time of the closing the survey, 125 complete responses had been received, a 36% response rate. Though the initially desired level of 140 – 160 complete responses was not achieved, the survey was closed as two reminders had already been sent to the target list and a week had passed after the second reminder, but no additional responses were received.

The composition of the respondents to the survey was:

1. Marketing roles: 44%
2. Non-marketing roles: 56%
3. North America: 18.4%
4. South America: 0%
5. Europe: 18.4%
6. Middle East and Africa: 10.4%
7. Asia Pacific excluding India: 22.4%
8. India: 28.8%
9. Australia and New Zealand: 1.6%

The response rates were proportionately slightly higher from individuals in Marketing roles, and from India, Asia Pacific excluding India, and Middle East and Africa. The responses rates were proportionately slightly lower from individuals in non-Marketing roles, and from North America, Europe, and Australia and New Zealand. The only outlier from the standpoint of response to the survey was South America, from where no responses were received despite a total of 3 email communications to the individuals in the target list. The study did not specify a minimum response rate from any sub-category as a criterion, and as such, the response rate distribution across role types and geographies was sufficiently diverse.

The response data was stored on Survey Monkey and only the investigator had access to it through an individual login and password. In addition, the investigator accessed Survey Monkey only through his own laptop, access to which was controlled through a lock screen requiring a password. No print outs of the data were taken since this was not required for statistical analysis or reporting of findings.

The data of the complete responses was downloaded from Survey Monkey as a CSV file, which was imported into SPSS for statistical analysis.

4. STATISTICAL ANALYSIS AND FINDINGS

Upon importing data into SPSS for conducting the statistical analysis, 2 survey submissions responses were found to have missing responses to some items. Therefore, these were not considered, and 123 survey responses were finally used for the statistical analysis.

4.1 Statistical Analysis

4.1.1 Checking for normality of distribution

The first step was to find if responses to items followed a normal distribution, since normal distribution is an underlying assumption of linear regression analysis (Razali & Wah, 2011). When the normality assumption is violated, interpretation and inferences may not be reliable or valid. The Shapiro-Wilk test (Results in Table 1) was used to check the normality assumption, as this is the most widely used test of normality (Mendes & Pala, 2003; Ahmad et al, 2015). The null hypothesis of normality test stated that the data were sampled from a normal distribution. If the p-value was greater than the critical value (α=0.05), the null hypothesis was not rejected, and it could be concluded that data were normally distributed (Ahmad et al, 2015).

Results (refer to Table 4.1 in Appendix 7.6) showed that the responses for each variable followed a normal distribution, barring internal communication (p = .022). With large enough sample sizes (n> 40), the violation of the normality assumption should not cause major problems (Ghasemi & Zahediasl, 2012; Allende-Alonso et al, 2019). Since the sample size from the study was adequately large (n=123), and the p-values were greater than 0.05 for all variables other than one, we could undertake further analysis using these data.

4.1.2 Testing for Internal Consistency Reliability of the Scale

The next step was to investigate the internal consistency reliability of the items in the survey questionnaire. Reliability is the ability of an instrument to measure the attributes of a variable or construct consistently. Internal consistency describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter-relatedness of the items within the test (Tavakol & Dennick, 2011).

Cronbach's alpha is the most widely used objective measure of reliability, which provides a measure of the internal consistency of a test or scale. *Cronbach's alpha reliability describes the reliability of a sum (or average) of q measurements where the measurements may represent q raters, occasions, alternative forms, or questionnaire / test items* (Cronbach, 1951). The commonly accepted values of Cronbach's alpha for description of internal consistency are:

1. $\alpha \geq 0.9$ is considered excellent,
2. $0.7 \geq \alpha \geq 0.9$ is considered good,
3. $0.6 \geq \alpha \geq 0.7$ is considered acceptable,
4. $0.5 \geq \alpha \geq 0.6$ is considered poor, and
5. $\alpha < 0.5$ is considered unacceptable

The 123 complete responses to the survey questionnaire were used for the analysis and the total and subscale Cronbach's alpha coefficient results of the scale are presented in Table 4.2.

Table 4.2: Results of the reliability analyses of the scale and subscales

Dimension	Cronbach's Alpha	Number of Items
Overall	.981	53
Insight gathering	.932	12
Market research	.916	12
Internal communication	.942	7
Shared interpretation	.909	5
Exploration	.897	6
Exploitation	.919	6
Business performance	.840	5

Results showed that the scale met the statistical requirement for internal consistency reliability:

1. The overall scale, which consisted of 53 items, had excellent internal consistency (α = .981).
2. The 'insight gathering' subscale, which consisted of 12 items, had excellent internal consistency (α = .932),
3. The 'market research' subscale, which consisted of 12 items, had excellent consistency (α = .916).
4. The 'internal communication' subscale, which consisted of 7 items, had excellent internal consistency (α = .942),
5. The 'shared interpretation' subscale, which consisted of 5 items, had excellent consistency (α = .909).
6. The 'exploration' subscale, which consisted of 6 items, had good internal consistency (α = .897),

7. The ‘exploitation’ subscale, which consisted of 6 items, had excellent consistency (α = .919).
8. The ‘business performance’ subscale, which consisted of 5 items, had good internal consistency (α = .840).

4.1.3 Item-Total score and item-subscale score correlations

Next, the correlations of the items with the total score scale and each of the subscales respectively were determined by conducting Pearson correlation analysis. Item-total score correlation should be greater than 0.25 for any item (Zijlmans et al., 2018) to meet the criterion of internal reliability of the scale.

We found that all item-total score correlations were between 0.337 and 0.847, and all item-subscale score correlations were between 0.467 and 0.854. The results indicated that all items in the survey questionnaire had high internal reliability. All item-total score correlation statistics were computed, and the information was presented in Table 4.3 in the Appendix 7.7.

4.1.4 Testing the proposed hypotheses

To test the proposed hypotheses, the linear relationship between the two continuous variables in each hypothesis was examined.

‘The correlation between two variables is denoted by the letter ‘r’ and quantified with a number that varies between -1 and +1. A value of zero indicates there is no correlation. And a value of 1 indicates perfect correlation. The sign of the r shows the direction of the correlation – a negative sign indicates the variables are

inversely correlated. The strength of correlation increases from 0 to +1 and 0 to -1.' (Mondal & Mondal, 2017).

Pearson's correlation is used to characterize how well a least squares regression line fits data, and it provides a test of the hypothesis that two measures are independent (Hart 1999). Therefore, the Pearson's correlation coefficient value enables the determination of the strength of the linear relationship between the variables under examination:

1. r values > .70 are considered highly positive,
2. r values > .40 but <.70 are considered moderately positive,
3. r values > .10 but < 0.40 as are considered weakly positive

If their corresponding p-value is < 0.05, the correlation relationship is considered statistically significant (Komaroff, 2020). The Pearson's correlation coefficient was computed for the variables in each of the hypotheses and the results were presented in Table 4.4:

Table 4.4: Means, standard deviations, and correlation of continuous variables

Table 4. Means, standard deviations, and correlation between continuous variables.

Variable	M	SD	Sensing	Market research	Insight gathering	Sense making	Internal communication	Shared interpretation	Experimentation	Exploitation	Exploration	Business performance
Sensing	3.15	.65	1									
Market research	3.09	.67	.94**	1								
Insight gathering	3.20	.70	.95**	.78**	1							
Sense making	3.08	.89	.87**	.74**	.90**	1						
Internal communication	3.03	.91	.85**	.72**	.89**	.99**	1					
Shared interpretation	3.16	.91	.86**	.74**	.88**	.98**	.94**	1				
Experimentation	3.15	.77	.81**	.72**	.82**	.87**	.86**	.86**	1			
Exploitation	3.22	.80	.76**	.69**	.76**	.80**	.78**	.80**	.95**	1		
Exploration	3.08	.81	.79**	.68**	.80**	.86**	.86**	.84**	.95**	.81**	1	
Business performance	3.39	.81	.69**	.62**	.69**	.70**	.68**	.70**	.71**	.61**	.75**	1

Note: **p* < .05, ***p* < .01, ****p* < .001.

Results showed that there were positive relationships between the variables in the proposed research model and as articulated in the hypotheses, that were statistically significant at $p < 0.01$ levels (Glass & Hopkins, 1996).

4.1.5 Multiple regression analysis

While we found statistical support for correlation between the variables in the proposed model, simultaneous multiple regression was undertaken to further understand the relationship between the dependent variable and the predictors. The under mentioned was the approach of the regression analysis:

1. The Adjusted R-squared method was used to examine the goodness of fit of the regression model and a two-tailed p value of less than or equal to 0.05 was considered statistically significant.
2. The F Test was conducted to identify if the regression model is estimated to be feasible or not (Alita et al., 2021).

3. The null hypothesis (H_0) was that the independent variables – sensing, sense making, and experimentation – did not have a significant effect simultaneously on the dependent variable – business performance.
4. The alternative hypothesis (H_1) was that the independent variables – sensing, sense making, and experimentation – had a significant effect simultaneously on the dependent variable – business performance.
5. If the significance value (measured by the two-tailed p-value) was < or = 0.05, then H_0 was rejected, and H_1 was accepted, which meant that the independent variables simultaneously affected the dependent variable.
6. If the significance value (measured by the two-tailed p-value) was > 0.05, then H_0 was retained, and H_1 was rejected, which meant that the independent variables did not simultaneously affect the dependent variable.
7. The coefficients of determination – R^2 or R^2_{adj} – indicated how much variation in the response was explained by the proposed model. The higher the R^2 or R^2_{adj}, the better the model fit the data (Akossou & Palm, 2013).

Information about the Analysis of Variance in the regression model was presented in Table 4.5 in Appendix 7.6. The F value and the corresponding significance (p-value) indicates sufficient evidence about the significance of the model, i.e., the model was found to be feasible.

The Model Summary was presented in Table 4.6 in Appendix 7.6. The overall model with the three predictors (sensing, sense making, and experimentation) significantly predicted business performance:

1. R^2=.55,

2. R^2_{adj}=.54,

3. F (3, 119) = 47.90, p<.001.

In other words, 54% of the variance in business performance was accounted for by the three predictors, based on the model.

4.1.6 Checking for multi collinearity

Since there were statistically significant positive correlations between the variables (refer Table 4.4), the regression models were checked for multicollinearity effect using variance inflation factor (VIF). The VIFs represent the factor by which the correlations amongst the predictors inflate the variance (Wilcox, 2001). A VIF greater than 10 is a common threshold for detecting severe multicollinearity in the social sciences while in sciences, the threshold is 5.0 (O'brien, 2007).

The partial regression coefficients, corresponding t-values, and collinearity statistics were presented in Table 4.7 and explained below:

Table 4.7: Coefficients

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
Model		B	Std. Error	Beta	T	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.702	.267		2.628	.010					
	mean of sensing	.350	.160	.283	2.195	.030	.692	.197	.135	.229	4.361
	mean of sense making	.097	.140	.107	.692	.490	.693	.063	.043	.159	6.274
	mean of experimentation	.411	.137	.389	2.991	.003	.712	.264	.185	.225	4.445

a. Dependent Variable: mean of business performance

1. Intercept: the estimated business performance of a hypothetical company with no sensing, no sense making, and no experimentation was .70.
2. Partial regression coefficient (slope): for any given values of the other independent variables, sensing, sense making, and experimentation increased by 1 was associated with business performance increase of .35, .10, and .41 respectively.
3. Corresponding t-values: Among the three independent variables, sensing (t=2.20, p=.030) and experimentation (t=2.99 p=0.003) were found to be statistically significant predictors after controlling for other independent variables. Sense making ((t=0.692 p=0.49) was not found to be a statistically significant predictor after controlling for other independent variables.
4. Multi collinearity: Results from tests to check if the data met the assumption of collinearity indicated that there was no severe multicollinearity in the regression models (sensing: Tolerance = .23, VIF = 4.36; sense making: Tolerance = .16, VIF = 6.27; experimentation: Tolerance = .22, VIF = 4.44). Due to higher tolerance of multi collinearity in studies in social sciences with VIF value of 10 defined as the threshold value for severe multi collinearity, the multi collinearity found in the analysis is acceptable.

Based on the results from the statistical analysis, the equation to describe the proposed model could be restated as:

Business performance = 0.70 + 0.35*sensing + 0.41*experimentation + error

4.2 Summary of Findings

1. Using the Shapiro-Wilk test, the survey responses were analyzed for normality of distribution. The responses for items related to all variables, barring 'internal communication' were found to follow a normal distribution. Since responses to items for 9 out of the 10 variables followed normal distribution, the data was considered suitable for further statistical analysis.

2. To study the internal consistency reliability of the items in the survey questionnaire, Cronbach's alpha was computed. The overall scale, which consisted of 53 items, had excellent internal consistency ($\alpha = .981$). The internal consistency of the sub-scales ranged from good or excellent (α ranging from 0.840 to 0.942).

3. Using Pearson Correlation analysis, item-total score and item-sub scale score correlations were computed. All correlation values were higher (item-total score correlations were between 0.337 and 0.847, and all item-subscale score correlations were between 0.467 and 0.854) than the required value of 0.25, indicating that all items in the survey questionnaire had high internal consistency.

4. The hypotheses proposed in the research model were examined by computing the Pearson's correlation coefficient, which is a measure of the statistical relationship between two continuous variables. There is statistical support for all nine hypotheses.

The hypotheses and the findings are shared below (all analysis was done employing a Pearson correlation coefficient).

a) **H1a: Sensing by an organization relates positively to its business performance.**

The level of sensing done by an organization was positively correlated with its business performance and statistically significant, based on the value of the Pearson correlation coefficient ($r = .69$, $p < .01$). Therefore, the hypotheses that sensing positively influences business performance could not be rejected (Day, 2002; Teece, 2007; Day, 2011; Teece, 2014; Teece, 2016).

b) **H1b: Market research by an organization relates positively to its business performance.**

The level of market research done by an organization was positively correlated with its business performance and statistically significant, based on the value of the Pearson correlation coefficient ($r = .62$, $p < .01$). Therefore, the hypotheses that market research influences business performance could not be rejected.

c) **H1c: Insight gathering by an organization relates positively to its business performance.**

The level of insight gathering done by an organization was positively correlated with its business performance and statistically significant, based on the value of the Pearson correlation coefficient ($r = .69$, $p < .01$). Therefore, the hypotheses that insight gathering influences business performance could not be rejected.

d) **H2a: Sense making by an organization relates positively to its business performance.**

When the level of sense making done by an organization was compared to its business performance, it demonstrated a positive and statistically significant relationship, indicated by the value of the Pearson correlation coefficient (r = .70, p < .01). Therefore, the hypotheses that sense making influences business performance could not be rejected (Day, 2002; Teece, 2007; Day, 2011; Teece, 2014; Teece, 2016).

e) **H2b: Internal communication of the findings from sensing by an organization relates positively to its business performance.**

When the level of internal communication done by an organization was compared to its business performance, it demonstrated a positive and statistically significant relationship, indicated by the value of the Pearson correlation coefficient (r = .68, p < .01). Therefore, the hypotheses that internal communication of the findings from sensing influences business performance could not be rejected.

f) **H2c: Shared interpretation of the findings from sensing by an organization, relates positively to its business performance.**

When the level of shared interpretation done by an organization was compared to its business performance, it demonstrated a positive and statistically significant relationship, indicated by the value of the Pearson correlation coefficient (r = .70, p < .01). Therefore, the hypotheses that shared interpretation of the findings from sensing influences business performance could not be rejected.

g) **H3a: Experimentation by an organization based on sensing and sense making relates positively to its business performance.**

The Pearson correlation coefficient of experimentation and business performance by an organization was found to be positive and statistically significant ($r = .71$, $p < .01$). Therefore, the hypotheses that experimentation by an organization based on sensing and sense making influences business performance could not be rejected.

h) **H3b: Exploitation of current resources and capabilities by an organization based on sensing and sense making relates positively to its business performance.**

The Pearson correlation coefficient of exploitation and business performance by an organization was found to be positive and statistically significant ($r = .61$, $p < .01$). Therefore, the hypotheses that exploitation by an organization based on sensing and sense making influences could not be rejected.

i) **H3c: Exploration of new resources and capabilities based on sensing and sense making relates positively to business performance.**

The Pearson correlation coefficient of exploration and business performance by an organization was found to be positive and statistically significant ($r = .75$, $p < .01$). Therefore, the hypotheses that exploration by an organization based on sensing and sense making influences could not be rejected.

The summary information about the relationship between the variables in the research model was represented in Table 4.8.

Table 4.8: Correlation between the Continuous Variables

Independent variable	Dependent variable	Pearson correlation coefficient	Finding
Sensing	Business performance	r = .69, p < .01	Hypothesis H1a could not be rejected
Market research	Business performance	r = .62, p < .01	Hypothesis H1b could not be rejected
Insight gathering	Business performance	r = .69, p < .01	Hypothesis H1c could not be rejected
Sense making	Business performance	r = .70, p < .01	Hypothesis H2a could not be rejected
Internal communication	Business performance	r = .68, p < .01	Hypothesis H2b could not be rejected
Shared interpretation	Business performance	r = .70, p < .01	Hypothesis H2c could not be rejected
Experimentation	Business performance	r = .71, p < .01	Hypothesis H3a could not be rejected
Exploitation	Business performance	r = .61, p < .01	Hypothesis H3b could not be rejected
Exploration	Business performance	r = .75, p < .01	Hypothesis H3c could not be rejected

5. To further study the relationship between the independent variables and the dependent variable, simultaneous multiple regression was undertaken:

a) The F test was conducted to test the significance of the regression model. The F- value was 47.904 at a p-value of <0.001 indicated the null hypotheses that the independent variables (sensing, sense making, and experimentation) did not have a significant effect simultaneously on the dependent variable (business performance) was not supported. Therefore, the proposed model was found to be feasible.

b) Findings from the Adjusted R squared computation to examine the model fit showed that the three predictors (sensing, sense making, and experimentation) predicted 54% of the variance in business performance, at a statistical significance of p<0.001, indicating an acceptable fit of the regression model to the data.

c) The partial regression coefficients were computed next. The partial regression coefficient (slope) showed that for any given values of the other independent variables, an increase of 1 in sensing, sense making, and experimentation respectively was associated with a corresponding increase in the dependent variable, i.e., business performance of .35, .10, and .41. The relatively low positive influence of sense making on business performance, as indicated by the value of the partial regression coefficient, was noteworthy.

d) Based on the corresponding t-values (t-value > 2, for statistical significance) and p-values (p-value < 0.05 for statistical significance) of the partial regression coefficients, among the three independent variables, sensing and experimentation were found to be statistically significant in their positive influence on business performance, after controlling for other predictors. However, sense making was not found to be statistically significant in its positive influence on business performance, after controlling for other predictors. This is an unexpected finding and one reason for this could be that responses to the items that measured 'internal communication' did not meet the criterion for normality of distribution. Another reason could be that the data is representative of the practices of the higher education industry. Or it could be that the pace of response expected of an organization to keep up with market changes, leaves no time or opportunity to undertake extensive Sense making.

e) Since there were statistically significant positive correlations between the variables, the regression models were checked for multicollinearity effects using a variance inflation factor (VIF) analysis. Results showed that there was no severe multicollinearity in the regression models, as the VIF for each independent variable was lower than 10, the benchmark for severe collinearity in studies in social sciences.

f) Considering the findings from the statistical analysis, the equation of best fit for the model, based on simultaneous multiple regression was stated as:

Business performance = 0.70 + 0.35*sensing + 0.41*experimentation + error

Therefore, sense making could be dropped as an independent variable in the model as it did not contribute any additional predictive value to the model.

5. IMPLICATIONS AND CONCLUSION

The discussion of results, implications of the research and areas of future research, limitations and conclusions are presented in this chapter. This discussion is divided into five sections. The first section provides a recap of the findings of the statistical analysis. The second section is devoted to the discussion of results. The third section addresses the implications for theory and suggests areas of future research and discusses implications for practitioners. The fourth section discusses the limitations of the study. The conclusions drawn from the research are shared in the fifth section.

5.1 Recap of the Findings of the Statistical Analysis

1. Using the Shapiro-Wilk test, the normality of distribution of the responses to the questionnaire was investigated. The results were presented in Table 4.1 in Appendix 7.6. Results show that the responses for each variable follow a normal distribution, except for internal communication (P-value of Shapiro Wilk = .022). Since the sample size from the study is adequately large (n=123), and the P-values of Shapiro Wilk are greater than 0.05 for all variables other than one, we can undertake further analysis using these data.
2. Cronbach's alpha tests were conducted to assess the internal consistency and reliability of the overall scale and the sub-scales that were used in this research. The results were presented in Table 4.2 in Chapter 4. Results demonstrate that the overall scale and all the subscales have good reliability.
3. The item-total score correlations and item-subscale score correlations were investigated employing a Pearson's correlation coefficient analysis. The item-

total score correlation statistics were presented in Table 4.3 in the Appendix 7.6. All item-total score correlations and all item-subscale score correlations are higher than 0.25, which means all the items in the scale have high internal consistency.

4. The hypotheses proposed in the research model were examined by computing the Pearson's correlation coefficient. The correlation matrix for all the variables in the hypotheses was presented in Table 4.4 in Chapter 4. Results indicate that there is statistical support for the hypotheses, i.e., there are positive relationships between the variables in the proposed research model at statistically significant levels.
5. To investigate the feasibility of the research model, simultaneous multiple regression analysis was undertaken. The analyses of variance in the regression model are presented in Table 4.5 in Appendix 7.6. Results show support for the theory that the independent predictive variables (sensing, sense making, and experimentation) simultaneously influence the dependent variable (business performance), at a statistically significant level ($p<0.001$).
6. The Adjusted R square value was computed to examine the model fit. The model summary was presented in Table 4.6 in Appendix 7.6. Results indicate that the model with the three predictors (sensing, sense making, and experimentation) predicts 54% of the variance in business performance, at a statistically significant level ($p < 0.001$).

g) The unstandardized coefficients, standardized coefficients, t-value, and p-value were calculated to understand the extent of the influence of each independent variable in the model, and the statistical significance. The findings were presented in Table 4.7 in Chapter 4. Results indicate that the influence of sense making on business performance was not statistically significant (t-value < 2.0, p-value > 0.05). However, there is a statistically significant influence of sensing and experimentation respectively on business performance. Stated differently, the study indicates that the inclusion of sense making in the model does not significantly add to the predictive value of the model. This is an unexpected finding and could be representative of the practices of the higher education industry. Or it could be that the pace of response expected of an organization to keep up with market changes, leaves no time or opportunity to undertake extensive Sense making. Another reason for this could be that responses to the items that measured 'internal communication' did not meet the criterion for normality of distribution.

7. Collinearity statistics were examined since the independent variables have high positive correlation with each other. The VIF (Variance Inflation Factor) values show that there is no severe multi collinearity, or there is absence of perfect collinearity, among the independent variables. Based on the regression analysis, and the call for parsimony, the equation that is derived to best explain the research findings is:

   Business performance = 0.70 + 0.35*sensing + 0.41*experimentation + error

5.2 Discussion of Results

The research model advanced hypotheses about the relationships between independent variables, sensing and its sub-components, market research and insight gathering; sense making and its sub-components, internal communication, and shared interpretation; and experimentation and its sub-components, exploitation and exploration, and the dependent variable of business performance. This model represents a change from past research models that explored the market sensing capability, due to its focus on strategic action orientation, rather than a static analysis.

A survey instrument was constructed to collect information from informants. As discussed earlier, the eventual instrument consisted of a combination of previously used items from prior peer reviewed research, and adapting items from research in the field of organizational responsiveness for previously unmeasured concepts. The resulting scale consisted of 53 items and 123 respondents completed the instrument completely.

The model proposed in this study advanced hypotheses about the relationships between ten variables, as briefly highlighted below:

1. *Sensing and business performance*

Hypothesis 1a: Sensing by an organization relates positively to its business performance.

The hypothesis that sensing positively influences business performance could not be rejected. This finding is similar to results in prior research (Day, 2002; Teece, 2007; Day, 2011; Teece, 2014; Teece, 2016). That is, additional support for the positive link between sensing and business performance was found in the globally conducted research in the higher education industry.

2. *Market research and business performance*

Hypothesis 1b: Market research by an organization relates positively to its business performance.

The hypothesis that market research positively influences business performance could not be rejected. This finding presents a new insight that adds to the findings from past research. The positive relationship between market research and business performance, while seemingly intuitive, highlights the importance of sensing the market in a formal and systematic manner, to ensure the organization is basing its strategy on a current and relevant understanding of the market. The implications of this finding for theory and practice are further discussed in the next section.

3. *Insight gathering and business performance*

Hypothesis 1c: Insight gathering by an organization relates positively to its business performance.

The hypothesis that insight gathering alone positively influences business performance could not be rejected. This finding presents a new insight that adds to the findings from past research. If viewed in a causal manner, the positive relationship between insight gathering and business performance underscores the importance of intelligence gathering on an ongoing, informal basis, by market facing staff of the organization, as a complement to market research, which is more formal, structured, and expensive to undertake frequently.

However, if viewed simply as a colinear relationship, firms that are willing to invest and take such an action exhibit greater performance. The implications of this finding for theory and practice are further discussed in the next section.

4. *Sense making and business performance*

Hypothesis 2a: Sense making by an organization relates positively to its business performance.

The hypothesis that sense making positively influences business performance could not be rejected. This finding is along the lines of similar findings in prior research (Day, 2002; Teece, 2007; Day, 2011; Teece, 2014; Teece, 2016). However, the finding that the process of sense making relates positively to business performance did not add to the explanatory value of the model. That is, when the regression analysis was run it was discovered that the inclusion of the sensemaking step did not significantly enhance the predictive value of the model.

5. *Internal communication of the findings from sensing and business performance*

Hypothesis 2b: Internal communication of the findings from sensing by an organization relates positively to its business performance.

The hypothesis that internal communication of the findings from sensing positively influences business performance could not be rejected. This result offers an insight that adds to the findings from past research. Eisenhardt and Martin (2000) touched upon the role of communication in the evolution of dynamic capabilities. Foley and Fahy (2004) later commented on the importance of organizational communication to the creation of market sensing capability. The positive relationship between internal communication and business performance outlines the importance of communicating market findings across the organization in building a market responsive organization. Communication of market findings enables staff across functions to operate from the same market information and fully comprehend the challenges and opportunities the organization is facing. This was expressed in the in-depth interviews as well as the statistical analysis. The implications of this finding for theory and practice are further discussed in the next section.

6. *Shared interpretation of the findings from sensing and business performance*

Hypothesis 2c: Shared interpretation of the findings from sensing by an organization, relates positively to its business performance.

The hypothesis that shared interpretation of the findings from sensing positively influences business performance could not be rejected. This result offers an insight that adds to the findings from past research. Sinkula (1994) posited that market focused organizational learning was the precursor to internally focused organizational learning and enabled competitive advantage, which could not be achieved without consensus about the implications of the findings. Day (2002) defined the market learning process as a collection, validation and storing of information, with validation entailing the process of achieving a common understanding based on the market information. The positive relationship between shared interpretation and business performance indicates the importance of achieving alignment across the organization in determining the strategy to pursue to achieve superior business performance. Once the strategic choice is agreed on, the market findings, the shared interpretation, and the strategic choice can be stored in the organization's memory for future reference. The implications of this finding for theory and practice are further discussed in the next section.

7. *Experimentation and business performance*

Hypothesis 3a: Experimentation by an organization based on sensing and sense making relates positively to its business performance.

The hypothesis that experimentation positively influences business performance could not be rejected. This result offers one of the most novel and significant insights on the topic of dynamic capabilities and business performance. Experimentation is a new variable that was added to the model with the goal of beginning to analyze the impact of a strategic action orientation as the third stage of market sensing dynamic capability. The positive relationship between experimentation and business performance indicates that sensing and making sense of market findings is further enhanced (as evidenced by the positive correlation) because of an action orientation by the organization, in achieving superior business performance.

8. *Exploitation and business performance*

Hypothesis 3b: Exploitation of current resources and capabilities by an organization based on sensing and sense making relates positively to its business performance.

The hypothesis that exploitation positively influences business performance could not be rejected. This result offers one of the most interesting insights from the research that adds to the findings from past research. Exploitation was articulated as a sub-component of the 'Experimentation' variable in the model with the goal of substituting analysis with ‘market driven’ strategic action orientation as the third stage of market sensing dynamic capability. The positive relationship between exploitation and business performance indicates that if organizations leverage market findings to reconfigure their current assets and resources, they are prone to serve the market better. These results suggest that organizations which continuously scan for, make sense of, and respond to market findings faster than the competition tend to achieve superior business performance.

9. *Exploration and business performance*

Hypothesis 3c: Exploration of new resources and capabilities based on market sensing and sense making relates positively to business performance.

The hypothesis that exploration positively influences business performance could not be rejected. This result offers one of the most unique insights from the research that adds to the findings from past research. Exploration was articulated as a sub-component of the ‘Experimentation’ variable in the model with the goal of substituting analysis with a ‘market driving’ strategic action orientation as the third stage of market sensing dynamic capability. The positive relationship between exploration and business performance indicates that organizations which leverage market findings to create or acquire assets and resources to create a new market tend to perform better. It has been suggested by many scholars and practitioners that firms which leverage their current assets and resources, or develop new resources and capabilities, to disrupt the market or create a new market are often among the most successful (Wei and Wang, 2011; Teece, 2016; Hunt and Madhavaram, 2019; Dias and Lages, 2021).

5.3 Implications for Researchers and Practitioners

5.3.1 Implications for researchers

Scholars (Day, 1994; Eisenhardt and Martin, 2000; Day, 2002; Teece, 2007; Day, 2011) Teece 2014; Teece, 2016) have contributed significantly to and developed the theoretical importance of market sensing as a dynamic capability. The objective of this study was to explore the operationalization of market sensing, using insights and data from respondents who are part of the higher education industry.

The study advances the extant research on market sensing as a dynamic capability by proposing and investigating a strategic action orientation, rather than static analysis, in the research model. This was defined in the research model as 'Experimentation'. Results from statistical analysis show support for the positive relationship between those firms that engage in Experimentation and their Business performance. The inclusion of a strategic action orientation in the construct of market sensing capability is a key contribution of this study to the development of dynamic capability theory. Moreover, this finding may also serve as a potential guide for practical implementation, or at the very least a starting point for evaluation the contributions of action-based strategies.

Further, this study conceptualized two sub-components of Experimentation, Exploitation and Exploration. Results from statistical analysis show support for the positive relationship for both Exploitation and Exploration respectively and Business performance. This examination of the relationship between the type of strategic action and business performance and the significance of the positive relationship found, is an enhancement of the theoretical frameworks posited in extant research.

While the research models proposed in extant research (Teece, 2007; Teece 2014) have investigated and found support for a positive relationship between Sensing or Scanning and Business performance, this study conceptualized two sub-components of Sensing. Market research, i.e., formal, structured sensing, and Insight gathering, i.e., the informal, ongoing collection of information about the market. Results from a statistical analysis of these constructs show support for a positive relationship between Market research and Insight gathering respectively and Business performance. This examination of the relationship between the type of sensing undertaken and business performance and the significance of the positive relationship found, is an enhancement of the theoretical frameworks posited in extant research.

The study found that sense making did not add significant predictive value to the research model. Since this is an unexpected finding, it raises questions that require investigation in future research. A longitudinal study across industries might offer clearer insights and help clarify if this is an industry specific finding.

5.3.2 Implications for practitioners

Before discussing the implications for practitioners, it is useful here to briefly review the responses of leaders and senior managers who participated in the semi-structured interviews which was the first step of the research in this study.

Some of the pertinent responses gathered during the semi structured interviews are summarized below:

1. 'Some form of sensing or scanning is conducted across organizations. It is sometimes conducted prior to important organizational initiatives to validate insights while in other instances, it is undertaken systematically as market research.'
2. 'Market insights are gathered and shared within our organization. However, a systematic or reliable process of storing insights to make them useful isn't always in place.'
3. 'Sensing or market scanning efforts generally focus on known customers and competitors, with most attention being paid to the most important customers and largest competitors.'
4. 'There is limited proactive seeking of weak signals or efforts to identify new customers or potentially disruptive competition that is not obvious.'
5. 'Sensing or market scanning efforts do not focus on obtaining financial and operational benchmarking information.'
6. 'Sense making is conducted in organizations though the process could be restricted to the CEO and the top management team.'
7. 'Sensing and sense making is done regularly, as described above, but insights, learnings or interpretations are not always stored or made accessible to the broader organization systematically.'
8. 'Decisions are informed by the insights that are gathered and made sense of. However, these decisions are more often associated with serving the known

market, rather than with pursuing opportunities to serve a new customer segment.'

The study results indicate support for a positive relationship between sensing, sense making, experimentation and business performance. Further, the sub-components of sensing, i.e., market research and insight gathering; sense making, i.e., internal communication and shared interpretation, and experimentation, i.e., exploitation and exploration also have significant positive relationships respectively with business performance. These findings should provide greater confidence to managers in developing market sensing as a dynamic capability to achieve better business performance, and not merely engage in it as an organizational task.

Market research findings are relevant in developing a longitudinal view of the changes in the market and integrating the same into the organization's market information system and knowledge base (Sinkula, 1994). Insight gathering as a process allows for path independent learning, as market information is being gathered without a structure or objective in mind (Day, 2002). Given that disruption in several industries emerged from the periphery rather than the core, e.g., streaming music or streaming content disrupting the music and movies industries respectively, insight gathering through unstructured interactions with customers and vendors, and analysis of competitors' actions, could add to the valuable intelligence gathered through market research, providing the organization a holistic view of both the current and anticipated market.

Eisenhardt and Martin, (2000) theorized that internal communication catalyzes ideas in the organization to adapt to or take advantage of market information by reconfiguration of its resources. They further suggest that the more efficient, effective, and well shared that communication is, the more likely the firm is to reconfigure faster than competitors. The process whereby an organization develops a shared interpretation of the market findings is people dependent, and causally ambiguous (Sinkula, 1994; Eisenhardt, 1989; Teece, 2014). Therefore, it could create a competitive advantage. Equally important is the belief that when communication is strong, it engenders a sense of common purpose across the organization that enables better execution (Jaworski and Kohli, 1993). The organization's knowledge bank is an important resource, which helps the organization understand and share how new market information fits into the broad pattern of prior insights, learnings, interpretations, and decisions (Wei and Wang, 2011).

An interesting result of this study is the finding that to take advantage of the information and insights obtained from sensing or scanning efforts, it is essential that the market information gathered is shared broadly in the organization; an effort is made to reach consensus on the organization's strategic choices; and there is a knowledge bank where the market information and the strategic choices it has catalyzed, are memorialized. It is suggested that the obverse could signal a difficult experience for management. That is, if such a process of building organizational understanding and commitment to strategy is not followed, there would be limited organizational understanding of the longer arc of insights and decisions, and the organization could be responding to each major market shift discreetly, rather than building a long term, sustainable strategy to take advantage of the changing environment.

Findings from the study indicate that sense making does not add significant predictive value to the model. This finding could be reflective of the practices of the higher education industry. Alternatively, considering the pace of change being witnessed, particularly in high velocity industries such as consumer technology, gaming, and social media, it is feasible that organizations are acting on consumer insights in real time, without extensive sense making, and letting the consumer response determine which innovation should be pursued, and which discontinued.

Organizations face a challenge in developing the conviction to invest in experiments based on sensing and sense making, whether market driven or market driving, and in viewing this as essential to their health and business performance (Day, 2002; Wei and Wang, 2011). This is not only a matter of making financial investments or having visionary leadership. It requires the building of an inquisitive culture across the organization that encourages calibrated risk taking, supports failing (and learning) fast, and celebrates failures and successes in equal measure (Day, 2011). The long list of organizations that no longer dominate the industries they were once leaders in, is proof of the need for constant reconfiguration of assets and resources (Eisenhardt and Martin, 2000).

In organizations that have a well-established business model known for delivering strong results, it could be difficult to devote resources to insights that differ from conventional knowhow. Many managers ascribe to the “don’t try to fix what isn’t broken” approach to management. However, small, measured actions, i.e., experiments, enable the organization to adapt to or take advantage of change in the market faster than competition. Much like feeling one's way through a dark room, a few small steps to begin help an individual to make larger steps later.

Arguing from a managerial perspective, market sensing should be considered an essential dynamic capability for the organization to remain relevant in an environment of constant change. The research model, which includes a strategic action orientation, and the findings from the study, provides evidence that may guide managers and leaders to commit to developing market sensing as a dynamic capability.

5.4 Limitations of the Study and Areas of Future Research

There are several limitations of this study, and some could be addressed through future research.

1. This is a single period study based on the responses of participants from a single industry. Future research might conduct a longitudinal multi-industry study to further validate the research model and the relationship between the proposed variables explored in this study.

2. This study acknowledges the potential for but does not investigate interaction effects between the stages of sensing, sense making, and experimentation. A future study could undertake this investigation and concentrate on a more fine-grained analysis of the micro mediating causes.

3. Responses to the semi-structured interviews conducted as the first stage of this empirical research indicated that financial and operational benchmarking was

not conducted as part of the organization's market sensing. This finding could be representative of the practices in the higher education industry, which was the setting for this research. It would be useful to see if the results are similar in more financially driven industries, where financial data is more transparent (i.e., publicly traded firms which produce regular financial statements that are audited). Despite this finding, specific questions about financial benchmarking and operational benchmarking were included in the survey questionnaire. Based on responses to the same, it can be concluded that survey participants did not agree that their organizations undertook financial benchmarking vs. competitors. The responses to the question on operational benchmarking were neutral. A future study could re-examine these finding in the context of a different industry.

4. While this research found support for a positive correlation between sense making and business performance, subsequent linear regression analysis indicated that, controlling for the other predictors, the influence of sense making on business performance was not statistically significant. This finding was not predicted based on prior research results. Future research could explore whether:

    i) Sense making is not taking place.

    ii) Sense making is taking place, but elsewhere in the organization. For instance, it might be taking place only between the CEO and top management team.

iii) The pace of change and responsiveness required implies there is no time or process for sense making as there is urgency to respond or evolve.

Such research across multiple industries would be valuable to understand the relationship between sense making and business performance.

5. Given that the setting of the research is the higher education industry, subjective measures of business performance, expressed in relative terms vs. competitors were used to define the 'Business performance' variable. Future research study that uses objective measures, be they financial, customer satisfaction, resource productivity, etc., to define business performance will contribute to the understanding of the aspects of business performance that these 3 stages of market sensing dynamic capability are most likely or capable of influencing.

6. Some of the responses collected through the 5-point Likert scale could be inflated due to the Lake Wobegon effect, as they are being expressed in comparative terms. The Lake Wobegon effect is the human tendency to overestimate one's achievements and capabilities in relation to others (Svenson, 1981). A future study using absolute scales, rather than comparative, would offer a higher degree of reliability.

7. The responses collected in this research were offered by the managers of organizations in the Higher Education industry. In a future study, if the dependent variable, i.e., performance was to be measured differently, customer perception (students, employers) could be used to evaluate the dependent variable, i.e., performance.

5.5 Conclusion

The objective of this study was to explore the operationalization of market sensing in a higher education organization. As a practitioner from the higher education industry pursuing doctoral research, I chose to study 'operationalization' due to my experience and perception that market sensing is missing an action bias or action orientation in the manner that it is being discussed as a dynamic capability within the industry.

The Higher Education industry is different from other industries in several aspects. Most organizations in the industry are mission-focused and not-for-profit entities. In some instances, they are publicly funded and, therefore have a unique governance and funding structure. Financial performance is not the primary goal of the organizations in this industry. Several higher education organizations measure their impact in terms of social good and research output. Due to these factors, it is probable that market sensing has not informed the strategic actions of organizations in this industry. The consequence could be that these organizations are less future-ready in terms of their strategy, which could lead to operational or financial distress. The research model proposed to study the relationship between market sensing as a dynamic capability and business performance, which includes action orientation, is supported by the statistical analysis undertaken.

The relationships proposed between the key variables, expressed as hypotheses, are not rejected based on the data gathered and correlation analysis conducted. The model meets the goodness-of-fit to criteria, based on the data gathered, and is therefore robust for use in future studies. Regression analysis ruled out the influence of sense making, while controlling for other predictors, on business performance, but found that there is a statistically significant relationship between sensing and experimentation, respectively, and business performance, while controlling for the other predictors.

In conclusion, the study finds that the proposed research model is valid and can be used to articulate the relationship between market sensing capability, which includes action orientation, and business performance. The results from this study hopefully add to theoretical knowhow in the field by adding action orientation to the construct of market sensing as a dynamic capability. From a more personal perspective, I hope it convinces practitioners to develop market sensing capabilities in their organizations, whether in the higher education industry or in other industries.

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7. APPENDICES

7.1 Appendix 1: Literature Review

S. No.	Title	Publication	Authors	Year	Key contribution
1	A Behavioral Theory of the Firm	Endlewood Cliffs. Prentice Hall, NJ.	Cyert, R. M. & March, J. G.	1963	Building block for research in the fields of organizational learning and the paradigm of capabilities in strategy. Explained the basis of several aspects of the firm's behavior through the foundational concepts of bounded rationality, quasi resolution of conflict, uncertainty avoidance, problemistic search and organizational learning.
2	Organizational Learning: A Theory of Action Perspective	Addison-Wesley. Reading, MA	Argyris, C. & Schon, D.A.	1978	Defined concepts of organizational learning theory, theories of action, single loop learning and double loop learning. Explained how decisions are made by individuals and by an organization through exploration of the consequences of errors, resultant change in the organization's policies, and the storing of this information in the organization's memory.
3	Assessing Advantage: A Framework for Diagnosing Competitive Superiority	Journal of Marketing	Day, G.S. & Wensley, R.	1988	Suggested competitive strategy is based on the current competitive advantage enjoyed by the organization and proposed a framework for identifying the source of the advantage. Further explored the linkage between sources of competitive advantage, positional advantage, and performance outcomes, through the influence of strategic choices on and rate of investment in the sources of competitive advantage.
4	Making Fast Strategic Decisions in High-Velocity Environments	The Academy of Management Journal	Eisenhardt, K.M.	1989	Studied strategic decision making in the microcomputer industry and found the speed of strategic decion making was positively related to business performance in a high velocity environment when fast decision makers used more information, considered more alternatives, used more counselors for advice, used more techniques for conflict resolution, and made decisions that were more integrated with past strategy.
5	Organizational Culture and Marketing: Defining the Research Agenda	Journal of Marketing	Deshpande, R. & Webster, F. E.	1989	Defined organizational culture, climate, and explored the influence of culture on the management of the marketing function in an organization. Proposed a framework for studying the impact of the 5 paradigms of organizational culture on the prevalent state of and potential for improvement in the organization's marketing management.

S. No.	Title	Publication	Authors	Year	Key contribution
6	The Effect of a Market Orientation on Business Profitability	Journal of Marketing	Narver, J.C., & Slater, S.F.	1990	Proposed a definition of market orientation and its components and outlined the criteria for assessing its impact on business profitability. Outlined the market level factors and the organization level factors that influenced the profitability of an organization and suggested there was a U-shaped relationship between market orientation and business profitability.
7	Market Orientation - The Construct, Research Propositions, and Managerial Implications	Journal of Marketing	Kohli, A.K. & Jaworski, B.J.	1990	Proposed an improved definition of the construct of market orientation that included market intelligence gathering, dissemination and organizational responsiveness. Identified the antecedents of market orientation and the environmental factors that moderated the relationship between market orientation and business profitability.
8	Marketing's contribution to the strategy dialogue	Journal of the Academy of Marketing Science	Day, G.S.	1992	Suggested the role of marketing was vital in enabling the organization's competitive advantage and informing its strategy. Called attention to the importance of market orientation, not just for the marketing function, but for all functions, to gain a better understanding of customers and competitors, and the development of superior products.
9	Core Capabilities and Core Rigidities: A Paradox in Managing New Product Development	Strategic Management Journal	Leonard-Barton, D.	1992	Using data on new product and new process development from organizations, explored the concept of core capabilities and how they are rooted in the organization's values. Outlined the paradox of avoiding core rigidities, which are also core capabilities, but prevent innovation due to resistance to change.
10	Market Orientation - Antecedents and Consequences	Journal of Marketing	Jaworski, B.J. & Kohli, A.K.	1993	Empirically investigated the market orientation construct, its antecedents, its consequences, and the moderators of its relationship with business profitability. A key contribution was the finding that the relationship between market orientation and business profitability was strong and positive regardless of the environment, lending support to making market orientation a key part of the organization's culture or behavior.
11	Competing for the Future	Harvard Business School Press	Hamel, G. & Prahalad, C. K.	1994	Suggested a framework for leaders and managers to check if they are shaping the future. Outlined the 40-30-20 rule to understand the time that managers are spending on developing a corporate perspective of the future. Highlighted the need for organizational transformation with the future in mind, with more attention to foresight, which is collective and based on insights vs. vision, which could be individual and not based on a solid foundation.

S. No.	Title	Publication	Authors	Year	Key contribution
12	The Capabilities of Market-driven Organizations	Journal of Marketing	Day, G.S.	1994	Classified capabilities into inside-out, outside-in, and spanning processes. Identified market sensing and customer linking as outside-in processes. Suggested market sensing and customer linking were distinctive capabilities for market driven organizations.
13	Market-Information Processing and Organizational Learning	Journal of Marketing	Sinkula, J.R.	1994	Studied the relationship between how marketing information was processed and how organizations learned. Outlined the challenge in continuing to gather market exploratory information that could be contrary to the organization's prevalent knowledge. Delineated between market focused learning and internally focused learning and suggested that market focused learning could be a resource.
14	Does Competitive Environment Moderate the Market Orientation-Performance Relationship	Journal of Marketing	Slater, S.F. & Narver, J.C.	1994	Studied the influence of the competitive environment on the impact of market orientation on business performance using 4 parameters - market growth, buyer power, competitor concentration, and competitive hostility. Empirical evidence suggested that the competitive environment did not influence the relationship between market orientation and business performance.
15	Market Orientation and the Learning Organization	Journal of Marketing	Slater, S.F. & Narver, J.C.	1995	Outlining two different types of organizational learning, i.e., adaptive learning and generative learning, and the process of learning, i.e., information acquisition, information dissemination, and shared interpretation, studied the influence of organizational learning on behavior. Suggested that superior ability to learn enabled faster anticipatory action that allowed the organization to pursue a wider set of opportunities and due to the social complexity involved in the learning processes, imitating this competence was harder.
16	Customer Power, Strategic Investment and the Failure of Leading Firms	Strategic Management Journal	Christensen, C. & Bower, J. L.	1996	Outlined the dependency of successful organizations and their management on existing customers, making it challenging to direct resources to innovations that would define the future. Suggested that this focus on current customers and sustaining technologies was the primary reason why successful firms rarely drove disruptive innovation or managed to survive it.
17	The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail	Harvard Business School Press	Christensen, C.	1997	Using data from the disk drive market, argued that entry into a new market was less risky and more rewarding than entering an established market. Discussed the dilemma faced by successful firms in investing in disruptive technologies due to the initially low margins, adoption primarily in emerging or smaller markets and disinterest from top customers. Despite the dilemma, suggested that leading firms must invest in emerging markets when they are small.

S. No.	Title	Publication	Authors	Year	Key contribution
18	The Albatross of Product Innovation	Business Horizons	Shervani, T., & Zerrillo, P. C	1997	Outlined the benefits of product innovation growth such as superior returns, competitive advantage, preference among investors and high employee morale, and raised the question if there are conditions in which the organizational culture of product innovation could detract from corporate performance. Identifying the scenarios in which product innovation does not lead to corporate performance, suggested that organizations that invested in business system innovation were better placed to compete.
19	Customer-led and Market-oriented: Let's Not Confuse the Two	Strategic Management Journal	Slater, S.F. & Narver, J.C.	1998	Discussed the difference between customer orientation and market orientation. Outlined that customer-oriented organizations paid attention to the expressed needs of existing customers becoming short term in their focus and reactive in their approach. Explained that market-oriented organizations attempted to meet the latent needs of existing customers, becoming long term in their focus and proactive in their approach.
20	Customer-led and Market-oriented: a Matter of Balance	Strategic Management Journal	Connor, T.	1999	In response to Slater and Narver's (1998) article, argued that resource endowment and scale of the organization determined significantly if market orientation was superior to customer orientation for an organization. Suggested that, for small organizations, being oriented to key customers significantly influenced business performance.
21	Market-oriented is More Than Being Customer-led	Strategic Management Journal	Slater, S.F. & Narver, J.C.	1999	In response to Connor's (1999) article, suggested that market orientation was a phenomenon still to be fully explored. Proposed that market orientation, entrepreneurship, innovation, and organizational learning collectively represented a unique resource – positional advantage – that influenced performance of the organization.
22	Dynamic Capabilities: What Are They?	Strategic Management Journal	Eisenhardt, K.M. & Martin J.A.	2000	Suggested that dynamic capabilities view of strategy added a dynamic perspective to the resource-based view of strategy and outlined that the dynamic capabilities view was supported by empirical evidence, and possessed homogeneity and substitutability across organizations, thereby meeting the criteria of sound theoretical foundation.
23	Strategic Human Resource Management, Market Orientation, and Organizational Performance	Journal of Business Research	Harris, L.C. & Ogbonna, E.	2001	Studied the interrelationship between Market Orientation and Strategic Human Resource Management and their impact on organizational performance and concluded that Market Orientation, besides other factors, mediated the relationship between Strategic Human Resources Management and organizational performance.

S. No.	Title	Publication	Authors	Year	Key contribution
24	Does Market Orientation Matter?: A Test of the Relationship between Positional Advantage and Performance	Strategic Management Journal	Hult, G.T.M. & Ketchen Jr, D. J.	2001	Conducted a meta-analysis to investigate the benefit of developing market orientation on organizational performance. Suggested that market orientation did not have a linear or direct influence on the organization's performance, but rather as part of a number of factors that created positional advantage, which influenced performance.
25	Managing the Market Learning Process	The Journal of Business & Industrial Marketing	Day, G.S.	2002	Outlined a comprehensive definition of the market learning process, and suggested the market learning process included the processes of sensing and sense making, and vitally the process of storing the market information in the organization's memory. Proposed that sensing was about observing customers interact with products and services, and scanning the periphery of the business for insights, rather than asking questions of key customers. Highlighted the risk of myopic mental models in sense making and stressed the importance of developing broad, organization wide consensus based on multiple perspectives.
26	Creating a Superior Customer-relating Capability	MIT Sloan Management Review	Day, G.S.	2003	Advanced own 1994 work and proposed the framework of customer relating capability, based on three key organizational components, orientation, configuration, and information. Suggested the orientation, internal or external, and configuration, product focused or customer focused, resulted in the organization developing different customer relating capabilities.
27	Market Orientation and Performance in Service Firms: Role of Innovation	The Journal of Services Marketing	Agarwal, K., Erramilli, M., & Dev, C. S.	2003	Proposed that the link between market orientation and organizational performance was mediated by innovation and studied this relationship using data from international hotel chains. Found empirical support that market orientation was positively associated with innovation, judgmental performance, and objective performance. Based on findings, proposed that judgmental performance mediated the relationship between market orientation and objective performance, and innovation and objective performance.
28	Towards a Further Understanding of the Development of Market Orientation: A Conceptual Framework Based on the Market-sensing Capability	Journal of Strategic Marketing	Foley, A. & Fahy, J.	2004	Studied the similarities between learning orientation and market orientation and suggested that market sensing capability consisted of learning orientation, organization system, market information and organization communication. Posited that market orientation as a behavior or aspect of culture mediated the relationship between market sensing dynamic capability and the organization's performance.

S. No.	Title	Publication	Authors	Year	Key contribution
29	Explicating Dynamic Capabilities: The Nature and Micro-foundations of (Sustainable) Enterprise Performance	Strategic Management Journal	Teece, D.J.	2007	Stated that VRIN assets had to be combined with dynamic capabilities for the assets to be reconfigured to needs of the changing environment and posited that dynamic capabilities could be in 3 parts, sensing, seizing, and reconfiguration. Explored the importance of learning and governance in developing dynamic capabilities. Outlined that resources and competences could lead to operational excellence but dynamic capabilities were required to achieve evolutionary fitness, i.e., organizational performance in a changing environment.
30	Market Orientation, Knowledge-related Resources and Firm Performance	Journal of Business Research	Olavarrieta, S. & Friedmann, R.	2008	Studied the relationship between knowledge related resources and business performance using a sample of Chilean publicly traded companies and proposed that knowledge related resources such as market sensing capability and reputation assets such as corporate image mediated the effect of an organization's market orientation on its business performance. Found empirical support for the complementarity of marketing orientation as a culture and knowledge related resources such as market sensing capability in influencing organizational performance.
31	The Moderating Role of Reward Systems in the Relationship between Market Orientation and New Product Performance in China	International Journal of Research in Marketing	Wei, Y.S. & Atuahene-Gima, K.	2009	Studied the relationship between reward systems, market orientation and new product performance using a sample of high technology organizations in China. Based on categorization of reward systems into two categories - risk taking strategies and longer-term strategies, found empirical support for the hypothesis that market orientation complemented by reward systems influenced new product performance. Posited that alignment between outside-in and inside-out processes could help to deliver new product success.
32	Closing the Marketing Capabilities Gap	Journal of Marketing	Day, G.S.	2011	Posited that the organization had to develop adaptive marketing capabilities to remain relevant in the extremely fast changing environment. Suggested that these adaptive marketing capabilities be built on commitment to constant market sensing, sharing of insights to challenge conventional organizational knowhow, and building of new value propositions in partnership with vendor with complementary skills.

S. No.	Title	Publication	Authors	Year	Key contribution
33	Making Sense of a Market Information System for Superior Performance: The Roles of Organizational Responsiveness and Innovation Strategy	Industrial Marketing Management	Wei, Y.S. & Wang, Q.	2011	Proposed that the organization's performance was linked to not just its strategic resources but also the strategic actions that it took. Used a sample of 180 Chinese companies as the sample for their study and found empirical support that strategic actions such as market driven response or market driving innovation mediated the relationship between strategic resource such as a market information system and organizational performance.
34	Toward Further Understanding the Market Sensing Capability - Value Creation Relationship	The Journal of Product Innovation Management	Bharadwaj, N. & Dong, Y.	2014	Defined the organization's market sensing capability as customer focus and suggested its routines comprised of market learning activities and customer-oriented practices. Defined the customer's perception of the organization's performance as perceived customer value and studied if the customer performance standards, i.e., customer's expectation of performance, moderated the relationship between market learning activities and customer-oriented practices respectively and perceived customer value. Using data from computer and electronics manufacturers, found support for the relationship between market learning activities and perceived customer value, regardless of the customer performance standards, and found the relationship between customer-oriented practices and perceived customer value was stronger when customers had more stringent customer performance standards.
35	The Foundations of Enterprise Performance: Dynamic and Ordinary Capabilities in an (Economic) Theory of Firms	Academy of Management Perspectives	Teece, D.J.	2014	Argued that access to VRIN resources combined with signature management processes such as the creation and rejuvenation of dynamic capabilities offered competitive advantage. Suggested that it was the link between resources, capabilities and strategy that created enterprise performance and highlighted the vital role of leadership and management in taking market driven and market driving action.
36	Dynamic capabilities and entrepreneurial management in large organizations: Toward a theory of the entrepreneurial firm	European Economic Review	Teece, D.J.	2016	Suggested that managers had to act as entrepreneurs in the current environment of accelerating change and outlined three roles within that - role as operational manager, role as entrepreneur and role as leader. Categorized dynamic managerial capabilities as managerial cognition, managerial social capital, and managerial human capital. Posited that the dynamic capabilities framework provided a mechanism to integrate the role of managerial action into the economic analysis of an organization.

S. No.	Title	Publication	Authors	Year	Key contribution
37	Adaptive Marketing Capabilities, Dynamic Capabilities, and Renewal Competences: The "Outside vs. Inside" and "Static vs. Dynamic" Controversies in Strategy	Industrial Marketing Management	Hunt, S.D. & Madhavaram, S. (2020)	2020	Stated that Resource Advantage Theory addressed the 'outside-in vs. inside-out' and the 'static vs. dynamic' controversies in the theories of strategy. Posited that Resource Advantage Theory highlighted the importance of management in understanding the market (current and potential) and deploying existing resources or acquiring resources to serve customers faster and better than competitors. Concluded that Resource Advantage strategy, Market Orientation strategy and Adaptive Marketing Capabilities strategy were consistent in the importance placed on sensing, using the intelligence gathered, and committing resources with flexibility to address market needs.
38	Measuring Market-sensing Capabilities for New Product Development Success	Journal of Small Business and Enterprise Development	Dias, A.L. & Lages, L. F.	2021	Building on research in the field of entrepreneurship, suggested a definition of the market sensing capability that included scanning, interpreting and response. Defined scanning as analytical processes and customer relationships, interpreting as business experience, and response as organizational articulation. Using data from the Portuguese market for analysis, found empirical support for the influence of market sensing capability on new product development success.

7.2 Appendix 2: Recruitment Email for Semi Structured Interviews

Dear (First Name Last Name),

I hope you're well.

As part my PhD in General Management program at Singapore Management University's Lee Kong Chian School of Business, I propose to conduct a research study titled '*Exploring the operationalization of market sensing in a higher education organization*'.

As the first step of the proposed research study, it is my goal to conduct an interview with leaders and senior managers at business schools to understand their perspective about:

i) Shifts in the operating environment of universities or business schools – customers, competitors, and other factors.

ii) What have been the key changes in the environment?

iii) How your organization anticipates, tracks, and captures information about education market shifts?

iv) How the organization communicates the market information that is captured?

v) Is this communication method effective in reaching a shared interpretation of the information across your organization? If yes, why? If no, what improvement would enable that?

vi) How does the shared interpretation of market information enable strategic action in terms of small experiments?

vii) Which organizations (*including yours*) in the industry are being more successful in taking advantage of the changing environment vs. competition? Is market information a source of this competitive advantage?

viii) If possible, please provide an example of how your organization has evolved its existing business model (*or processes*) or considered a new business model (*or processes*) based on market information.

I'm writing to invite you to share your experience and perspective to help inform this study by agreeing to participate in the first step i.e., the interview. This interview will be conducted using a virtual meeting platform – MS Teams or Zoom – whichever you prefer and could take up to 60 minutes.

Please note that your participation in the study is entirely voluntary and there is no compensation for your participation. I will seek your consent, online or in hard copy, to audio record the interview. The recording will be stored on the meeting platform used for the interview, which only I will have access to through a login and password. The purpose of the recording is to accurately capture your feedback during the interview and to transcribe for the purpose of a phrase and phrase cluster analysis. The recording will not be transferred to any entity in any form and will be destroyed after 90 days of the interview being completed.

If you do not consent for the audio recording, I will make cryptic notes during the interview to refer to at a later stage of the research. The notes will not contain any personally identifiable information and only I will have access to the notes.

Please note you can withdraw your consent and / or data up to 15 days after the interview has been completed.

In case the results or insights from the study are shared with other parties, it will be at an aggregate level only and not attributable to any participant.

Once you indicate your willingness to participate and your consent for the interview to audio recorded or for me to take cryptic notes during the interview, I will share with you the Participation Information Sheet and Informed Consent Form and advise you of next steps prior to scheduling the interview at a date / time of your convenience.

Looking forward to hearing from you.

Warmly,

Ashish Bhardwaj

PhD General Management candidate

Mobile: +65 8727 6084

Email: bhardwaja.2017@phdgm.smu.edu.sg

Supervisor: Professor Philip Zerrillo

Email: pzerrillo@smu.edu.sg

Mobile: +66 65 752 8642

Lee Kong Chian School of Business

Singapore Management University

7.3 Appendix 3: Questions for the Semi Structured Interviews

1. *How has your organization and the industry been coping with the changing landscape?*
2. *What, in your opinion, have been the key changes in the market?*

Probing comments: Let us think about the environment, your consumers, your peer organizations, new competitors, and changes in technology.

3. *At a broad level, could you please share how your organization stays informed about the market changes that impact its business?*

Probing comments: What is the different type of information your organization gathers? Has this changed recently? Are there new information sources being used? Is this a formal process in your organization? Who is responsible for this?

4. *Please share about the processes by which the market information you gather about the changes that impact your business are shared across the organization.*

Probing comments: What is your organization's process for sharing the market information that is gathered? Has this changed recently? Are there new sharing methods being used? Is this a formal process in your organization? Who is responsible for this? Who receives this information? How?

5. *What are the mechanisms by which your organization (its leadership and managers) determines which market information to pay attention to?*

Probing comments: What is your organization's process for determining which market information is relevant and important? Has this changed recently? Are there new criteria being used? Is this a formal process in your organization? Who makes this determination? How?

6. *How does the market information that is considered relevant and important influence your organization's strategy?*

Probing comments: How does your organization use market information to inform or influence its strategy? Is this a formal process in your organization? Who is responsible for this? Do they have great influence?

7. *Which organizations (including yours) in the industry are being more successful in taking advantage of the changing landscape vs. competition? Is market information a source of this competitive advantage?*

Probing comments: Who do you think has been most successful in managing change in your industry? Why? In your opinion, what are the most important reason(s) why they have been successful in doing so? Focus from leadership? Seeking information from wider sources? Organizational structure? Others?

8. *Please share an example of how your institution has evolved its existing business model (or processes) or considered a new business model (or processes) based on market information.*

7.4 Appendix 4: Key Themes from the Semi Structured Interviews

S. No.	Question*	Key themes in the responses
1	What, in your opinion, have been the key changes in the market?	Introduction of online and hybrid programs; using more tools and technology; students are more ROI conscious; interest in MBA is decreasing; interest in lifelong learning is growing; more students negotiating for scholarships; work visas is a concern; some schools have launched campuses in new geographies; resignations have affected team experience and capability; recruiters require better tech / data skills
2	At a broad level, could you please share how your organization stays informed about the market changes that impact its business?	Closely follow rankings; attend industry conferences; informally connect with ex colleagues at other institutions; gather information about and benchmark with 2 - 3 competitors; undertake market research before a new initiative; read trade journals; seek insight from accreditors; have done custom research before launching new specializations; feedback is gathered at alumni events
3	Please share about the processes by which the market information you gather about the changes that impact your business are shared across the organization.	Discussed in the Executive Committee meeting; colleagues that attend conferences share insights via email; information is sought prior to curriculum review or program review; admission teams present end of cycle report; market information is shared during reviews if asked by the Deans; key alumni are part of school committees and provide information
4	What are the mechanisms by which your organization (its leadership and managers) determines which market information to pay attention to?	Rankings are very important and ranking related information always discussed; accreditation is the current priority for the leadership / Deans; career placement information is reviewed; there is emphasis on managing costs and student satisfaction; alumni engagement is important
5	How does the market information that is considered relevant and important influence your organization's strategy?	Decision is made by the Dean / Leadership and the Committee; we track and respond to actions taken by competitors such as launch of new programs or initiatives; change in strategy is slow as process for introducing new programmes or initiatives is committee based; new campus decision has been based on availability of funding from alumni or government
6	Which organizations (including yours) in the industry are being more successful in taking advantage of the changing landscape vs. competition? Is market information a source of this competitive advantage?	Market information is essential but does not ensure success; technology has enabled adaptation; role of faculty and their flexibility is critical; leading business schools seem to be most innovative or there is innovation in the privately funded schools; demand for short term executive education is growing, ranking builds preference with students and recruiters and reduces the risk of making changes (Names mentioned: INSEAD, Harvard, London Business School, Purdue, Stanford, Imperial, ISB, IIM Kozhikhode, Africa Leadership University, Darden, HEC, IE, Chinese University of HK)
7	Please share an example of how your institution has evolved its existing business model (or processes) or considered a new business model (or processes) based on market information.	Launched hybrid programs; launched new campuses / executive education centers; introduced collaborations with corporations; launched women-only programs; introduced integrated programs with combined bachelors and masters; reduced dependence on FT MBA and FT EMBA programs; introducing sustainability focus in all internal processes; increased recruitment efforts in Africa and ASEAN; hiring more adjunct faculty

* Each question was followed by probing remarks

7.5 Appendix 5: Recruitment Email for Online Survey Questionnaire

Dear (First Name Last Name),

I hope you're well.

As part my PhD in General Management program at Singapore Management University's Lee Kong Chian School of Business, I am conducting a research study titled '*Exploring the operationalization of market sensing in a higher education organization*'.

I would like to invite you to respond to an online survey questionnaire, which is part of my research study. This online survey will take 15 – 20 minutes to complete. The survey does not seek any personally identifiable information from you. Because of the anonymous nature of the study, you cannot withdraw your consent or data after study completion.

If you'd like to participate in this study, please reply to this email.

Please note that your participation in the study is entirely voluntary and there is no compensation for your participation. Please be assured that all information collected will be treated confidentially. Any publication of the research results will include data only at the aggregate level.

If you have questions, please feel free to contact me. Thank you for considering this invitation to participate in this study!

Warmly,

Ashish Bhardwaj

PhD General Management candidate

Email: bhardwaja.2017@phdgm.smu.edu.sg

Mobile: +65 8727 6084

Supervisor: Professor Philip Zerrillo

Email: pzerrillo@smu.edu.sg

Mobile: +66 65 752 8642

Lee Kong Chian School of Business

Singapore Management University

7.6 Appendix 6: Statistical Analysis

Table 4.1: Shapiro-Wilk Normality Test

Variable	Shapiro-Wilk Value	P-value of Shapiro-Wilk
Sensing	.988	.365
Insight gathering	.989	.413
Market research	.989	.400
Sense-making	.985	.193
Internal communication	.975	.022
Shared interpretation	.984	.146
Experimentation	.990	.477
Exploration	.986	.259
Exploitation	.979	.055
Business performance	.984	.141

Table 4.3: Scale Reliability analysis and correlations of the item total score and item subscale score

Item No.	Label	Variable	X±SD	Item-total score correlation	Item-subscale total score correlation
3	My organization demonstrates openness to trends in the environment.	Insight gathering	3.35±0.90	0.661	0.558
4	My organization encourages employees to gather information on developments in the market.	Insight gathering	3.46±0.89	0.728	0.727
5	My organization encourages employees to report information on developments in the market.	Insight gathering	3.50±0.92	0.73	0.732
6	My organization's decisions are informed by the market intelligence provided by employees.	Insight gathering	3.18±1.01	0.711	0.625

Item No.	Label	Variable	X±SD	Item-total score correlation	Item-subscale total score correlation
7	My organization undertakes market research to understand trends related to the current business.	Market research	3.32±1.08	0.68	0.656
8	My organization undertakes market research to understand new trends in the market.	Market research	3.25±1.06	0.707	0.693
9	My organization tracks the market activity of competitors.	Market research	3.11±0.91	0.55	0.663
10	My organization gathers operational information about competitors.	Market research	3.04±0.86	0.533	0.693
11	My organization gathers financial information about competitors.	Market research	2.69±0.88	0.536	0.606
12	My organization scans the market to identify competition from new sources.	Market research	3.10±0.95	0.647	0.707
13	My organization accesses industry reports to understand competitive data on market share.	Market research	3.14±0.98	0.631	0.68
14	My organization attends industry forums to gather information about customers.	Market research	3.26±0.90	0.545	0.568
15	My organization attends industry forums to gather information about competitors.	Market research	3.08±0.83	0.467	0.547
16	My organization attends industry forums to gather	Market research	2.97±0.84	0.581	0.639

Item No.	Label	Variable	X±SD	Item-total score correlation	Item-subscale total score correlation
	information about vendors.				
17	My organization benchmarks its resources against the resources of competitors.	Market research	2.97±0.98	0.666	0.755
18	My organization benchmarks its capabilities against the capabilities of competitors.	Market research	2.97±0.97	0.662	0.711
19	My organization provides tools to employees in front line sales roles to report market insights.	Insight gathering	2.96±0.96	0.584	0.623
20	My organization provides tools to employees in customer service roles to report market insights.	Insight gathering	2.91±0.90	0.632	0.69
21	My organization encourages employees to spend time observing customers interact with our offerings.	Insight gathering	3.11±0.96	0.652	0.644
22	My organization encourages employees to analyze customer feedback, including complaints.	Insight gathering	3.36±1.00	0.694	0.703
23	My organization encourages employees to gather data on market forces influencing our customers.	Insight gathering	3.22±0.98	0.797	0.803
24	My organization encourages employees to gather data on market	Insight gathering	2.94±0.88	0.727	0.788

Item No.	Label	Variable	X±SD	Item-total score correlation	Item-subscale total score correlation
	forces influencing our vendors.				
25	My organization encourages employees to report data on market forces influencing our customers.	Insight gathering	3.22±0.93	0.774	0.813
26	My organization encourages employees to report data on market forces influencing our vendors.	Insight gathering	2.96±0.90	0.686	0.749
27	My organization has created a knowledge base that stores important information about the organization's business.	Internal communication	3.06±1.02	0.747	0.76
28	My organization stores information about the market (customers, competitors, and vendors) in its knowledge base.	Internal communication	3.00±0.98	0.766	0.795
29	My organization encourages employees to access the organization's knowledge base.	Internal communication	3.00±1.07	0.759	0.798
30	My organization encourages employees to understand the implications of information about the market.	Shared interpretation	3.15±0.97	0.761	0.722
31	My organization's leadership regularly devotes time to analyze information about the market.	Shared interpretation	3.15±1.15	0.828	0.791
32	My organization encourages	Shared interpretation	3.19±1.03	0.733	0.676

Item No.	Label	Variable	X±SD	Item-total score correlation	Item-subscale total score correlation
33	employees to suggest experiments / initiatives based on information about the market. My organization has created a process for its leadership to decide about experiments / initiatives based on information about the market.	Internal communication	2.92±1.11	0.847	0.824
34	My organization's leadership takes into consideration the input received from employees when considering experiments / initiatives based on information about the market.	Internal communication	3.06±1.07	0.835	0.797
35	My organization's leadership shares with employees the process by which it commits to experiments / initiatives based on information about the market.	Internal communication	2.96±1.12	0.825	0.835
36	My organization's business plans are evolved based on information about the market.	Shared interpretation	3.15±1.07	0.816	0.829
37	My organization updates its knowledge base about the evolution in business plans.	Internal communication	3.06±1.05	0.845	0.854
38	My organization updates its knowledge base about the rationale	Shared interpretation	3.06±1.11	0.839	0.841

Item No.	Label	Variable	X±SD	Item-total score correlation	Item-subscale total score correlation
	for the evolution in business plans.				
39	My organization encourages experiments / initiatives based on information about the market.	Exploration	3.15±1.00	0.843	0.71
40	My organization requires that each experiment / initiative has a defined objective.	Exploitation	3.21±0.95	0.838	0.811
41	My organization requires that each experiment / initiative is supported by a defined budget.	Exploitation	3.17±0.77	0.704	0.824
42	My organization requires that each experiment / initiative is concluded in a defined timeframe.	Exploitation	3.09±0.96	0.7	0.818
43	My organization requires that each experiment / initiative is sponsored by a member of the leadership.	Exploitation	3.11±0.92	0.659	0.823
44	My organization's experiments / initiatives are focused on enhancing existing offerings.	Exploitation	3.33±0.85	0.699	0.689
45	My organization's experiments / initiatives are focused on developing new offerings.	Exploration	3.32±1.01	0.741	0.772
46	My organization has a defined goal of	Exploration	3.18±1.03	0.71	0.74

Item No.	Label	Variable	X±SD	Item-total score correlation	Item-subscale total score correlation
	developing new offerings.				
47	My organization offers employees incentives to develop new offerings.	Exploration	2.81±1.08	0.616	0.724
48	My organization acknowledges experiments / initiatives that are successful.	Exploitation	3.26±0.95	0.668	0.657
49	My organization acknowledges experiments / initiatives that are not successful.	Exploration	3.09±0.93	0.651	0.668
50	My organization stores information about the outcome of all experiments / initiatives in the organization's knowledge base.	Exploration	2.79±1.00	0.747	0.722
51	My organization is preferred by customers.	Business performance	3.61±0.90	0.599	0.661
52	My organization has launched new offerings that are successful.	Business performance	3.49±0.99	0.614	0.689
53	My organization is financially strong.	Business performance	3.45±1.06	0.377	0.467

Table 4.5: Analysis of Variance

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F value	Sig.
1	Regression	43.512	3	14.504	47.904	<.001[b]
	Residual	36.030	119	.303		
	Total	79.542	122			

a. Dependent Variable: mean of business performance
b. Predictors: (Constant), mean of experimentation, mean of sensing, mean of sense making

Table 4.6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.740a	.547	.536	.55025

a. Predictors: (Constant), mean of experimentation, mean of sensing, mean of sense making

7.7 Appendix 7: Survey Questionnaire

1. A note from the researchers

You are invited to participate in this survey on 'Operationalization of market sensing', which will take approximately 15 minutes to complete.

The survey does not seek any personally identifiable information. Please note that your participation in the study is entirely voluntary and there is no compensation for your participation.

If you exit the survey at any time prior to submitting, your survey responses will not be recorded.

All survey information will be treated confidentially. Any publication of the research results will include aggregate data only and no individual respondent's submissions will be published.

We are grateful for your taking the time to share your insights through this survey.

* 1. Please choose your geographical location (choose one only)

- [ ] North America
- [ ] South America
- [ ] Europe
- [ ] Middle East and Africa
- [ ] Asia Pacific excluding India
- [ ] India
- [ ] Australia and New Zealand

* 2. Please choose your job role (choose one only)

- [ ] In a marketing role
- [ ] Not in a marketing role

172. Relative to competitors, how would you describe your organization:

	Much worse than competitors	Worse than competitors	The same as competitors	Better than competitors	Much better than competitors
My organization demonstrates openness to trends in the environment.	◯	◯	◯	◯	◯
My organization encourages employees to gather information on developments in the market.	◯	◯	◯	◯	◯
My organization encourages employees to report information on developments in the market.	◯	◯	◯	◯	◯
My organization's decisions are informed by the market intelligence provided by employees.	◯	◯	◯	◯	◯
My organization undertakes market research to understand trends related to the current business.	◯	◯	◯	◯	◯
My organization undertakes market research to understand new trends in the market.	◯	◯	◯	◯	◯

4. Relative to competitors, how would you describe your organization:

	Much worse than competitors	Worse than competitors	The same as competitors	Better than competitors	Much better than competitors
My organization tracks the market activity of competitors.	○	○	○	○	○
My organization gathers operational information about competitors.	○	○	○	○	○
My organization gathers financial information about competitors.	○	○	○	○	○
My organization scans the market to identify competition from new sources.	○	○	○	○	○
My organization accesses industry reports to understand competitive data on market share.	○	○	○	○	○

5. Relative to competitors, how would you describe your organization:

	Much worse than competitors	Worse than competitors	The same as competitors	Better than competitors	Much better than competitors
My organization attends industry forums to gather information about customers.	○	○	○	○	○
My organization attends industry forums to gather information about competitors.	○	○	○	○	○
My organization attends industry forums to gather information about vendors.	○	○	○	○	○
My organization benchmarks its resources against the resources of competitors.	○	○	○	○	○

My organization benchmarks its capabilities against the capabilities of competitors.	○	○	○	○	○

6. Relative to competitors, how would you describe your organization:

	Much worse than competitors	Worse than competitors	The same as competitors	Better than competitors	Much better than competitors
My organization provides tools to employees in front line sales roles to report market insights.	○	○	○	○	○
My organization provides tools to employees in customer service roles to report market insights.	○	○	○	○	○

7. Relative to competitors, how would you describe your organization:

	Much worse than competitors	Worse than competitors	The same as competitors	Better than competitors	Much better than competitors
My organization encourages employees to spend time observing customers interact with our offerings.	○	○	○	○	○
My organization encourages employees to analyze customer feedback, including complaints.	○	○	○	○	○

175. Relative to competitors, how would you describe your organization:

	Much worse than competitors	Worse than competitors	The same as competitors	Better than competitors	Much better than competitors
My organization encourages employees to gather data on market forces influencing our customers.	○	○	○	○	○
My organization encourages employees to gather data on market forces influencing our vendors.	○	○	○	○	○
My organization encourages employees to report data on market forces influencing our customers.	○	○	○	○	○
My organization encourages employees to report data on market forces influencing our vendors.					

9. Relative to competitors, how would you describe your organization:

	Much worse than competitors	Worse than competitors	The same as competitors	Better than competitors	Much better than competitors
My organization has created a knowledge base that stores important information about the organization's business.	◯	◯	◯	◯	◯
My organization stores information about the market (customers, competitors, and vendors) in its knowledge base.	◯	◯	◯	◯	◯
My organization encourages employees to access the organization's knowledge base.	◯	◯	◯	◯	◯
My organization encourages employees to understand the implications of information about the market.	◯	◯	◯	◯	◯
My organization's leadership regularly devotes time to analyze information about the market.	◯	◯	◯	◯	◯

10. Relative to competitors, how would you describe your organization:

	Much worse than competitors	Worse than competitors	The same as competitors	Better than competitors	Much better than competitors
My organization encourages employees to suggest experiments / initiatives based on information about the market.	○	○	○	○	○
My organization has created a process for its leadership to decide about experiments / initiatives based on information about the market.	○	○	○	○	○
My organization's leadership takes into consideration the input received from employees when considering experiments / initiatives based on information about the market.	○	○	○	○	○
My organization's leadership shares with employees the process by which it commits to experiments / initiatives based on information about the market.	○	○	○	○	○
My organization's business plans are evolved based on information about the market.	○	○	○	○	○
My organization updates its knowledge base about the evolution in business plans.	○	○	○	○	○
My organization updates its knowledge base about the rationale for the evolution in business plans.	○	○	○	○	○

11. Relative to competitors, how would you describe your organization:

	Much worse than competitors	Worse than competitors	The same as competitors	Better than competitors	Much better than competitors
My organization encourages experiments / initiatives based on information about the market.	○	○	○	○	○
My organization requires that each experiment / initiative has a defined objective.	○	○	○	○	○
My organization requires that each experiment / initiative is supported by a defined budget.	○	○	○	○	○
My organization requires that each experiment / initiative is concluded in a defined timeframe.					
My organization requires that each experiment / initiative is sponsored by a member of the leadership.	○	○	○	○	○

12. Relative to competitors, how would you describe your organization:

	Much worse than competitors	Worse than competitors	The same as competitors	Better than competitors	Much better than competitors
My organization's experiments / initiatives are focused on enhancing existing offerings.	○	○	○	○	○
My organization's experiments / initiatives are focused on developing new offerings.	○	○	○	○	○
My organization has a defined goal of developing new offerings.	○	○	○	○	○
My organization offers employees incentives to develop new offerings.	○	○	○	○	○
My organization acknowledges experiments / initiatives that are successful.	○	○	○	○	○
My organization acknowledges experiments / initiatives that are not successful	○	○	○	○	○
My organization stores information about the outcome of all experiments / initiatives in the organization's knowledge base.	○	○	○	○	○

13. Relative to competitors, how would you describe your organization:

	Much worse than competitors	Worse than competitors	The same as competitors	Better than competitors	Much better than competitors
My organization is preferred by customers.	○	○	○	○	○
My organization has launched new offerings that are successful.	○	○	○	○	○
My organization is financially strong.	○	○	○	○	○
My organization is agile.	○	○	○	○	○
My organization is prepared for the future.	○	○	○	○	○