

AMERICAN UNIVERSITY OF BEIRUT

INNOVATION AS AN OUTCOME:
BUSINESS GROWTH OUTSIDE THE CORE

by
NARINE VAJAKAN WAHE BOLGHOURJIAN

A project
submitted in partial fulfillment of the requirements
for the degree of Master of Business Administration
to the Suliman S. Olayan School of Business
at the American University of Beirut

Beirut, Lebanon
April 2018

AMERICAN UNIVERSITY OF BEIRUT

INNOVATION AS AN OUTCOME:
BUSINESS GROWTH OUTSIDE THE CORE

by
NARINE VAJAKAN WAHE BOLGHOURJIAN

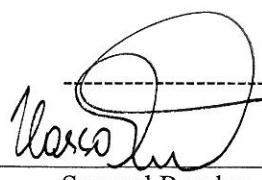
Approved by:

Dr. Marina Apaydin, Assistant Professor
Olayan School of Business



First Reader

Dr. Yassar Nasser, Senior Lecturer (Director of MBA)
Olayan School of Business



Second Reader

Date of project presentation: April 23, 2018

AMERICAN UNIVERSITY OF BEIRUT

THESIS, DISSERTATION, PROJECT RELEASE FORM

Student Name:

Bolghourjian

Narine

Vajakan Wahe

Last

First

Middle

Master's Thesis

Master's Project

Doctoral Dissertation

I authorize the American University of Beirut to: (a) reproduce hard or electronic copies of my thesis, dissertation, or project; (b) include such copies in the archives and digital repositories of the University; and (c) make freely available such copies to third parties for research or educational purposes.

I authorize the American University of Beirut, to: (a) reproduce hard or electronic copies of it; (b) include such copies in the archives and digital repositories of the University; and (c) make freely available such copies to third parties for research or educational purposes after:

- One year from the date of submission of my thesis, dissertation, or project.
 Two years from the date of submission of my thesis, dissertation, or project.
 Three years from the date of submission of my thesis, dissertation, or project.



May 14, 2018

Signature

Date

ACKNOWLEDGMENTS

This project was completed with the support and input of a number of individuals to which I am extremely thankful.

First and foremost, I am very thankful to my supervisor and first reader, Dr. Marina Apaydin, who was always available to support and provide prompt feedback even during her times off. Dr. Apaydin's input in incorporating a systematic literature review in my project and her constant push to read articles, attend workshops, and be informed about related topics were invaluable for my progress. I cannot but acknowledge and appreciate Dr. Apaydin's promptness and straight-to-the-point approach in tackling any obstacles in no time, and her positive approach with her students who she treats as professionals by placing her trust in them and allowing them to think critically and reflect on issues and topics that she puts on the table.

Special thanks also go to the director of the MBA program at the American University of Beirut, Dr. Yassar Nasser, who acted as my second reader and provided his support, vision, and guidance from the onset and put all the effort for facilitating the journey of MBA students at the Suliman S. Olayan School of Business.

Last but not least, my recognition and gratitude are also addressed to Mr. Hussein El Hajj, the general manager of Profico, and Mr. Ali El Hajj, the administrative assistant at Profico, for their cooperation in providing their input for preparing the teaching case and teaching note on their company, which constitutes an integral part of this project.

AN ABSTRACT OF THE PROJECT OF

Narine Vajakan Wahe Bolghourjian for Master of Business Administration

Major: Master of Business Administration

Title: Innovation as an Outcome: Business Growth Outside the Core

This project focuses on corporate level strategy and specifically on the subject of organizational innovation which is a topic of broad interest in the business world today as being one of the long-term sources of competitive advantage for organizations.

The aim of this project is to identify actions and best practices that successful companies can adopt to overcome barriers impeding innovation, and to leverage, exploit and explore available opportunities for innovation and growth. This topic is of importance for companies that wish to expand their operations and improve their competitive advantage and profitability. It is of special importance in the local Lebanese and regional markets as well, especially in the current economic situation and political turmoil, whereby firms need to think about the bigger picture, despite being caught up in day-to-day operations, to come up with and explore new ideas that improve their performance and enhance their profitability in the midst of intense competition and unclear external factors and macro-environment conditions.

Based on a systematic review of the literature published over the past 10 years, this project consolidates and covers publications on general innovation theory, innovation in small to medium enterprises, innovation in family firms, business model innovation, product innovation, organizational ambidexterity and organizational capabilities, as well as knowledge sourcing and creation.

The project also includes an application of the topic in practice within the Lebanese market by including a teaching business case and its corresponding teaching note (only available to instructors upon the permission of the author or the copyright holder if published at any point) involving a Lebanese company and the prospects of its growth through innovation involving the introduction of a new product with a revisited business model as well as the introduction of administrative innovations encompassing organizational structure and human resources.

CONTENTS

	Page
ACKNOWLEDGEMENTS.....	v
ABSTRACT.....	vi
ILLUSTRATIONS.....	x
TABLES.....	xi
Chapter	
I. INTRODUCTION.....	1
II. SYSTEMATIC LITERATURE REVIEW METHODOLOGY.....	3
A. Methodology.....	3
1. Data Collection.....	3
2. Data Analysis.....	3
3. Synthesis.....	4
B. Methodology Description.....	5
1. Planning.....	5
2. Execution.....	6
III. REPORTING – LITERATURE REVIEW.....	13
A. General Theory.....	14
B. Organizational Capabilities.....	24
C. Knowledge Sourcing/Creation.....	28
D. Product Innovation.....	31

E.	Business Model Innovation.....	33
F.	Organizational Ambidexterity.....	39
G.	Family Firms.....	45
H.	Small and Medium Sized Enterprises.....	50
I.	Innovation Framework Development.....	57
IV.	IMPLEMENTATION: CASE STUDY.....	59
A.	Disclaimer.....	59
B.	From Theory to Practice.....	59
C.	Introduction.....	60
D.	Macro-Environment Overview of Lebanon.....	62
E.	The Aluminum Industry Worldwide.....	64
F.	The Aluminum & Glazing Construction Industry Sector in Lebanon.....	66
	1. Construction Industry.....	66
	2. The Aluminum & Glazing Industry Value Chain and Major Players.....	67
G.	PROFICO.....	69
	1. History and Developments to Date.....	69
	2. Corporate Organization, Operations and Personnel.....	70
	3. Cost Structure and Financial Position.....	72
H.	Current Situation and Future Prospects.....	72
I.	Teaching the Case.....	73
	1. Teaching Note Synopsis.....	73
V.	CONCLUSION AND MANAGERIAL IMPLICATIONS.....	75

Appendix

I.	CONTRIBUTION TO GDP IN LEBANON BY SECTORS.....	79
II.	MAIN PRODUCERS OF PRIMARY ALUMINUM IN 1972.....	80
III.	MAIN PRODUCERS OF PRIMARY ALUMINUM IN 2010.....	81
IV.	ALUMINUM AND GLAZING SECTOR VALUE CHAIN IN LEBANON.....	82
V.	MARKET SHARE BREAKDOWN OF ALUMINUM AND GLAZING CONTRACTORS IN LEBANON.....	83
VI.	TIMELINE OF SELECTED MAIN EVENTS FOR PROFICO.....	84
VII.	PROFICO ORGANIZATION CHART.....	85
VIII.	PROFICO MANUFACTURING AND INSTALLATION PROCESS.....	86
IX.	PROFICO REVENUES OVER FIVE YEARS IN THOUSANDS OF US DOLLARS.....	87
X.	PROFICO SOURCES OF REVENUES.....	88
XI.	PROFICO REVENUE BREAKDOWN.....	89
	BIBLIOGRAPHY	90

ILLUSTRATIONS

Figure	Page
1. Breakdown of Shortlisted Publications by Topic Group.....	12
2. Framework of Organizational Innovation by Crossan and Apaydin (2010)....	15
3. Comparison of Innovation Determinant Models.....	16
4. Developed and Extended Framework of Organizational Innovation (Originally by Crossan and Apaydin, 2010).....	23

TABLES

Table	Page
1. Shortlisted Publications in the Top 10 Ranked Journals Publishing on Innovation.....	10
2. Number of Shortlisted Papers per Group for Abstract Analysis.....	11
3. Business Model Innovation Typology (Foss and Saebi (2017)).....	34

CHAPTER I

INTRODUCTION

Innovation is a topic of broad interest nowadays, especially in the business world, whereby the traditionally considered sources of competitive advantage of firms have changed with time and innovation has come to be regarded as one of the long-term sources of competitive advantage for organizations (Crossan and Apaydin, 2010).

This project focuses on innovation within the context of corporate level strategy which involves the creation of a value-added novelty that may extend to products, processes, and business models aiming at improving a firm's overall performance and creating value to be exploited by its stakeholders.

Despite the several types and definitions of innovation, this project focuses on innovation as an outcome, which has to do with the renewal, introduction, or enlargement of products, services, or markets. This can be done by leveraging synergies, introducing new products/services, entering new geographies, serving new customer segments, using new distribution channels, or moving into a new business. Within this context lies corporate diversification which can be related, unrelated, or partially related to the core of a company's business and operations, and these are closely linked to the concept of "growth outside the core" (Zook and Allen, 2003), which suggests that a sustainable growth can only be achieved based on the principles of adjacency and repeatability, whereby a firm incrementally pursues one opportunity and changes one variable at a time to introduce novelty and build a repeatable success formula.

This project also sheds light on the role of the leadership of an organization in adopting change and novelty to enhance the thrust and lead to an improved performance resulting in growth and enhanced profitability with a special focus on family firms and small to medium sized enterprises (SMEs), which is of special importance within the Lebanese context given that the vast majority, around 95% of Lebanese enterprises, are classified as micro to small and medium sized enterprises mostly established through family angel investors or family funding (Inventis, 2014).

In order to achieve these goals, I study the best practices and latest academic developments using a systematic literature review, and identify actions and best practices that successful companies can adopt to overcome barriers impeding innovation, and to leverage and exploit available opportunities for innovation, whether developed internally or sourced externally.

This topic is of importance in the local Lebanese and regional markets as well, especially in the current economic situation and political turmoil, whereby firms need to think about the bigger picture, despite being caught up in everyday operations, to come up with new ideas that improve their performance and profitability in the midst of intense competition and unclear external factors and macro-environment implications.

In the subsequent chapters of this project, the literature review methodology will be presented followed by a presentation of the available bibliography on the topic after a systematic analysis and a conceptual consolidation of the selected available literature on innovation. The application chapter of this project will involve a business case study on a Lebanese contracting company facing a growth opportunity for integrating backwards towards manufacturing as well as several administrative challenges.

CHAPTER II

SYSTEMATIC LITERATURE REVIEW METHODOLOGY

A. Methodology

An analytical review scheme is essential to evaluate the body of literature available on a specific topic, and a systematic literature review is an analytical scheme which uses an explicit algorithm as opposed to a fast and an approximate approach to search the available literature (Crossan and Apaydin, 2010). Despite the difficulties associated with the very large number of publications to review, and the shortcoming related to the insufficient representation of books, using a systematic review scheme improves the quality of the literature analysis as a result of the transparent and reproducible procedure it uses (Transfield et al., 2003). A systematic literature review comprises three parts as follows:

1. Data Collection

Data collection can be subjective and limited if knowledge of existing literature is adopted, or it can be disorganized if a random keyword search is used on multiple databases. A systematic literature review, on the other hand, removes the subjectivity and structures the data collection process by adopting a predefined selection algorithm and methodology (Crossan and Apaydin, 2010).

2. Data Analysis

Following data collection, the analysis part highly depends on the objective of the review. In the case of this project, the objective is to carry out a comprehensive

conceptual review and consolidation rather than an empirical and quantitative analysis (Crossan and Apaydin, 2010).

As such, the methodology relies on descriptive and qualitative rather than statistical and quantitative methods, thus looking for breadth rather than depth, and mainly aims at analyzing the initial data sets of compiled publications using an “eyeballing” technique to be followed by a more in-depth analysis of selected data.

3. Synthesis

Data synthesis is the last step and final outcome of a systematic literature review which aims at creating a value-added product as a result of the data analysis performed.

For the purpose of this project and following the data analysis comprising a quick “eyeball” review of selected publications, an in-depth analysis of the shortlisted publications was carried out thus identifying a set of eight topics which are covered in the upcoming literature review chapter. These topics include publications on general theory, innovation in small to medium enterprises (SMEs), organizational ambidexterity, business model innovation, organizational capabilities, innovation in family firms, product innovation, and knowledge sourcing or creation.

Overall, the methodology followed in this project is a systematic literature review (Transfield et al., 2003) and it uses a data collection procedure using a pre-defined algorithm, a qualitative data analysis technique, and a synthesis comprising an in-depth review of shortlisted publications grouped under eight different topics.

B. Methodology Description

As part of the methodology, Tranfield et al's (2003) three-stage procedure of planning, execution and reporting was followed as explained and implemented by Crossan and Apaydin (2010). The details of the first two stages as inspired from Crossan and Apaydin (2010) and applied to this project are described here below, whereas the third stage of reporting which diverges from Crossan and Apaydin (2010) is presented by the final outcome of the literature review under Chapter III of this project.

1. Planning

The planning stage involved defining the objectives of the project to reveal the key sources for data collection.

As explained earlier, the purpose of this project, and in specific this literature review, is to shed light on the available literature on the topic of innovation in general, and business model and product innovation as an outcome in small to medium family firms in developing economies in particular, which would be the main focus of the case study to be presented at the later sections of this project.

Based on the above objective, it was decided to limit the sources of publications to peer-reviewed journals from renowned citation indexes to increase the chances of relying on validated and impactful sources of information and knowledge. Accordingly, the Clarivate Analytics Web of Science's Social Sciences Citation Index (SSCI) database was chosen as providing one of the most comprehensive sources of coverage of literature with publications compiled from as early as the year 1900. Furthermore, the database's feature of citation counts as well as the filters of "highly

cited” and “hot papers” are unique features which allow the collection of publications of high influence.

For the purpose of this project and in order to have a wide enough range of coverage, which at the same time is recent enough to be applicable to the business world conditions of today, the search has been limited to all years available in the SSCI database at the time of the research (February 4, 2018) from 2006 till 2018 (covering 10 years in addition to the latest two years of very recent publications).

2. Execution

The execution stage itself consisted of several steps aiming at collecting and organizing the data including the following steps:

a. Identifying Selection Criteria: Keywords and Search Criteria

Given the plurality of meanings that the word “innovation” has and given that the word might be used in a variety of ways in different contexts, a very broad selection requirement was initially applied to the SSCI database to ensure a comprehensive search and widen the initial pool to include as many publications as possible. These requirements comprised the following:

a- Basic keyword for topic (title, keywords, abstract): ‘innovation’ and its derivatives (i.e. TS=innovation*)

b- Time span: 2006 till 2018

c- Document type: ‘review’ or ‘article’

d- Language: English

e- Subject area: ‘business’ and ‘management’

The abovementioned criteria resulted in an initial pool of 19,691 publications out of the 59,804 search returns for the keyword ‘innovation’. This pool of 19,691 publications was thus fixed as the basis for the remaining grouping and analysis.

b. Grouping selected publications

In addition to the broad selection requirement set as explained in the previous section, and in order to benefit from the different ‘credentials’ of publications, three different groups were devised from the initial pool of publications obtained by using the keyword adopted for initial selection.

As will be detailed in the next subsections, group 1 focused on meta-analyses and reviews in order to cover the broad theoretical foundations of the topic of organizational innovation. Group 2, on the other hand, aimed towards publications of high citation among the initial pool. Furthermore, and given the fact that recently published articles would normally not have enough time to be highly cited, a different selection criterion was applied to form group 3 focusing on recent publications of high influence.

1. Group 1: Reviews and Meta-analyses

The first group diverted from the initial pool of 19,691 findings and was selected with a minor difference, whereby the search was done by using the keyword ‘innovation’ in the title search field strictly and the keywords ‘meta’ and ‘review’ in the topic search field covering titles, abstracts, and keywords in general. This search yielded 471 results on which the unique feature of ‘*highly cited papers*’ of SSCI was applied to narrow down to a selection of 23 publications.

The '*highly cited papers*' feature refers to '*papers published in the last 10 years that are receiving the most citations (top 1%) when compared to peer papers (same field, same publication year)*' as defined by the SSCI database (<https://clarivate.libguides.com/authors/impact>).

Moreover, four other publications recommended by the academic reviewer of this project were added to this group bringing the total to 27 publications.

2. Group 2: Highly Cited Papers

The second group started from the initial pool of 19,691 publications that had '*innovation*' as the topic (titles, abstracts, and keywords) rather than only the title as is the case in group 1. The purpose of this second group was to select the high quality publications as measured by the number of times these publications were cited, since citation-based analysis is often adopted as a measure of paper effectiveness as quoted by Crossan and Apaydin (2010) from Saha et al (2003). Accordingly, using the '*highly cited papers*' feature of the SSCI database the pool was narrowed down to 380 papers.

It is to be noted that the SSCI has another citation-based filter feature as well called '*hot papers*,' which reveals '*papers published in the last two years that are receiving the most citations (top 0.1%) in the most recent two-month period when compared to peer papers (same field, same publication date)*' (<https://clarivate.libguides.com/authors/impact>). It was significant to find that 9 out of the 380 '*highly cited papers*' were also '*hot papers*' published during the past two years preceding the date of data collection (February 2018).

It is also to be noted that 8 out of the 380 highly cited papers of group 2 were already included in group 1, and as such they were excluded from group 2 and retained in group 1 only in order to avoid overlaps and duplications.

3. Group 3: Recent Papers

As noted in earlier sections of this project, recent publications may not have enough time to accumulate citations that would put them in the very top percentile of cited papers in their respective fields even if these publications are indeed of very high quality, which leads us to acknowledge that citation-based methods discriminate against recent publications most of the time. As such, the third group was devised to shed light on recent publications (2016 and 2017) which would be selected using an alternative criterion reflecting high quality.

Accordingly, and starting off from the initial pool of 19,691 publications, the SSCI database revealed that 4,626 papers were published in 2016 and 2017. From this reduced pool of recent publications, high quality papers were selected using the premise that top journals publish high quality papers in most instances.

As such, the SSCI database filter for '*source titles*' was used to pick out the papers published in the first 10 (ranked by the number of publication matches) set of publishing journals listed under the *50 Financial Times* journals (Table 1) to isolate 197 publications, out of which 17 papers were already included in groups 1 or 2 and as such they were excluded from group 3 and retained in the previous groups in order to avoid intergroup overlaps and duplications.

It is also to be noted that out of the 197 isolated papers using the above mentioned criterion, the 17 which were excluded from group 3 for being already

included in the previous groups were identified by the SSCI database as ‘*highly cited papers*’ while 1 of those 17 was identified as a ‘*hot paper*’ which further confirms their high quality and impact despite being recent publications.

	Source Title	No. of Papers	Financial Times Ranking
1	Journal of Business Ethics	34	17
2	Management Science	33	33
3	Information Systems Research	20	13
4	Academy of Management Journal	19	1
5	Journal of the Academy of Marketing Science	18	32
6	MIT Sloan Management Review	17	37
7	MIS Quarterly	16	36
8	Journal of Management	14	25
9	Journal of Management Studies	14	27
10	Administrative Science Quarterly	12	5
	TOTAL	197	

Table 1: Shortlisted Publications in the Top 10 Ranked Journals Publishing on Innovation

c. Compiling a consideration set

Following the grouping of selected data based on the adopted selection criteria, the shortlisted publications of each group less excluded duplicated entries for overlaps were compiled as shown in Table 2 below:

Group	Initial Pool	Filtered for Abstract Analysis	Less Duplicates
Group 1: Reviews and Meta-analyses	471	27	27
Group 2: Highly cited papers	19,691	380	372
Group 3: Recent Papers	4,626	197	180
Total			579

Table 2: Number of Shortlisted Papers per Group for Abstract Analysis

From the above shortlisted publications and using a data analysis technique relying on “eyeballing” the abstracts of the shortlisted papers, the final compiled consideration set for carrying out an in-depth literature review on was formed. While eyeballing the abstracts, publications were excluded if they were difficult to generalize or link to the central topic of this project, which is innovation as an outcome with a focus on growth outside the core business of a firm. In addition, publications in which the word innovation was used metaphorically to indicate creativity were also excluded.

The above mentioned exclusion criteria, which were used in a conservative fashion favoring inclusion rather than exclusion, resulted in a consideration set of 37 publications which were divided, judging from their abstracts, into 8 main headings as presented in the pie chart below (Figure 1).

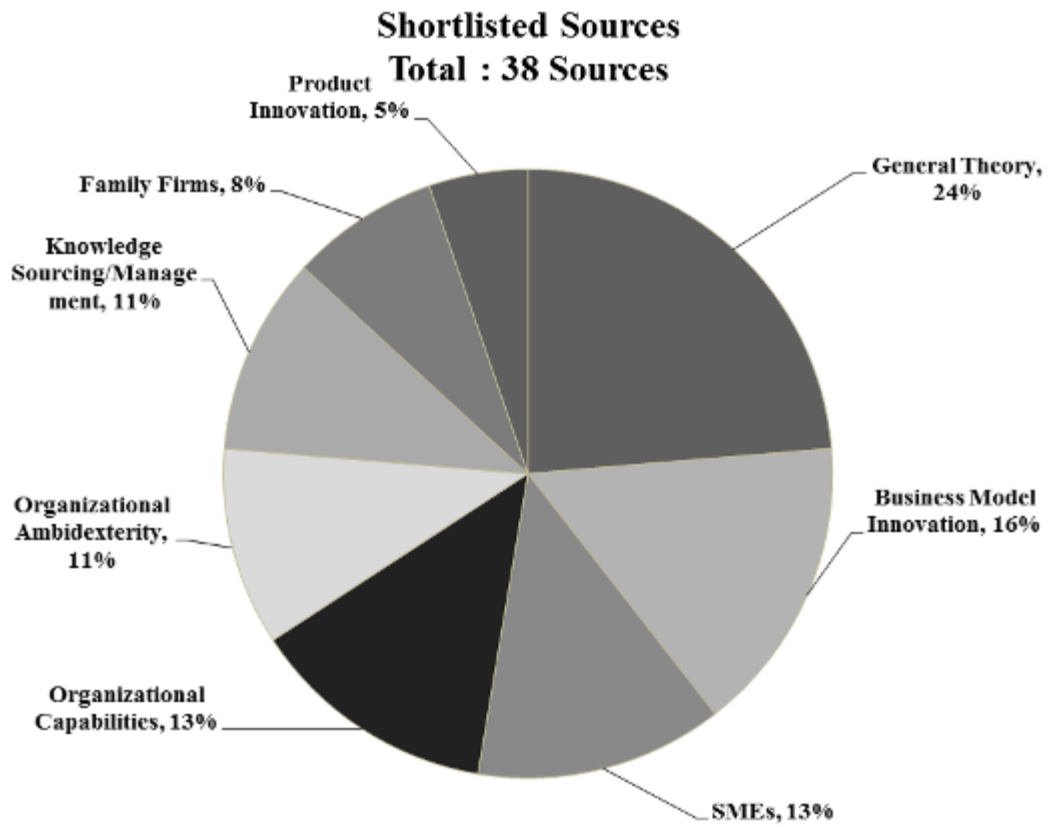


Figure 1: Breakdown of Shortlisted Publications by Topic Group

These shortlisted sources were then analyzed in depth as part of the reporting stage of this systematic literature review as presented under Chapter III of this project below.

CHAPTER III

REPORTING - LITERATURE REVIEW

Innovation is a topic of broad interest in the increasingly challenging business world of today as being one of the long-term sources of competitive advantage for organizations (Crossan and Apaydin, 2010). Innovation as a word can be used in a variety of ways and can be employed to reflect creativity or originality which makes the literature search and review more challenging. Within the business world, the word has received widespread attention and has been defined in a multitude of ways and applied within a number of contexts and frameworks.

In what follows in this literature review chapter, the definitions and applications of innovation as reviewed in the shortlisted sources represented in the earlier chapter of this project will be presented to first state the different understandings and adoptions of the word innovation within the business world, and then focus on those aspects of innovation that could be applied in small to medium firms operating in developing countries and aiming to grow their operations and improve their performance.

Accordingly, this chapter will be organized under 8 headlines corresponding to the 8 topics among which the shortlisted publications of the systematic literature review were grouped to be followed by a summary of the developments or enhancements to Crossan and Apaydin's framework in the recent literature.

A. General Theory

Crossan and Apaydin (2010) stress the novelty aspect of innovation by citing Hansen and Wakonen (1997) and compose a compiled and comprehensive definition of the term innovation via a broad research of publications by several authors. The definition, which reflects the breadth of their research objective, states that “*Innovation is: production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres: renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and an outcome*” (Crossan & Apaydin, 2010, p.1155).

Crossan and Apaydin (2010) clearly delineate the difference between innovation as a process and innovation as an outcome. While the former involves the introduction of new methods or approaches or technologies that can improve such methods and approaches, the latter has more to do with the renewal or enlargement of products, services, or markets. This definition automatically introduces the sequential aspect onto innovation since innovation as a process is necessary to introduce a value-added change and lead to innovation as an outcome, which is thus both necessary and sufficient to achieve and exploit such added value.

Moreover, Crossan and Apaydin (2010) focus on the organizational level of innovation as being within the control of the firm as opposed to the industry, national, or global levels. Within the organizational context, they shed light on the role of leadership in an organization, which acts as the causal interconnection between the process and outcome components of innovation, and plays a very crucial role in

adopting and directing the change and novelty to enhance the thrust and lead to an improved performance and overall increased profitability.

Crossan and Apaydin (2010) compile their findings into a comprehensive multi-dimensional framework of innovation divided into the two dimensions of process and outcome and the three determinants of leadership (upper echelon theory at individual and group level), managerial levers (resource-based view and dynamic capabilities at organizational level), and business processes (process theory).

Figure 2 below represents the multi-dimensional framework developed by Crossan and Apaydin (2010).

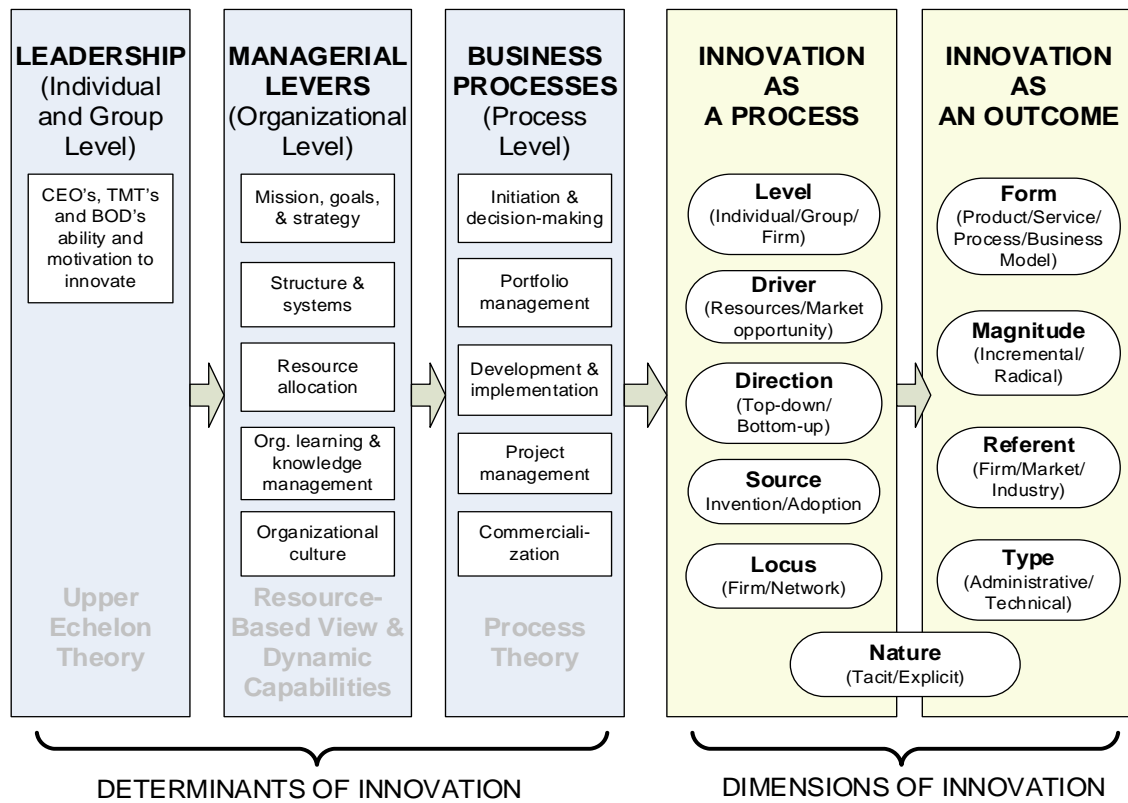


Figure 2: Framework of organizational innovation by Crossan and Apaydin (2010)

Since the time of creation of this comprehensive framework by Crossan and Apaydin (around 2008, published in 2010), additional papers were published on this

topic contributing to further development of understanding of organizational innovation.

Figure 3 below represents the conceptual development of the model as reflected in the literature in the 10 years.

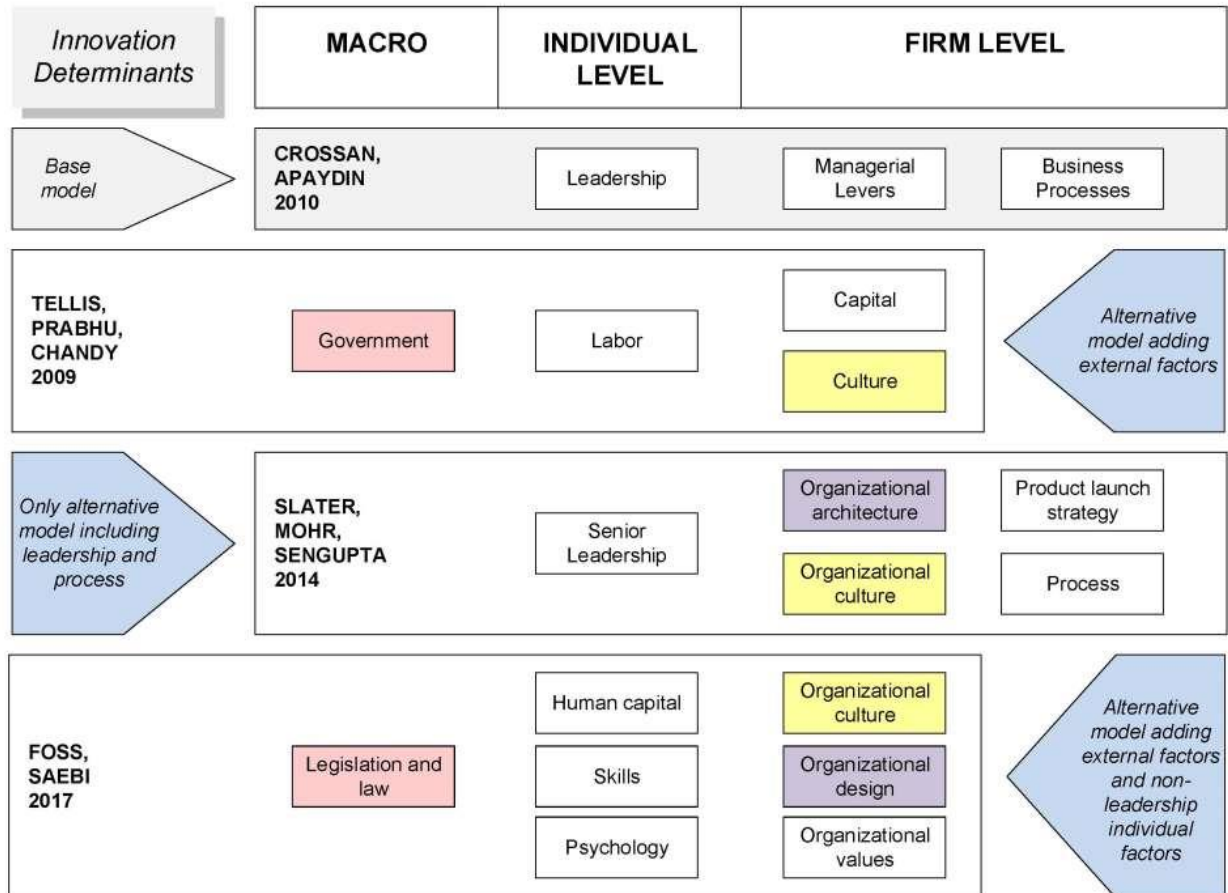


Figure 3: Comparison of Innovation Determinant Models

Tellis, Prabhu, and Chandy (2009) tackle product innovation and more specifically radical innovation, noting that most literature focuses on the inputs of innovation such as research and development (R&D), whereas what really matters is how the input transforms into output, which eventually translates into financial performance. The authors further claim that radical innovation is a key factor in growth and might even lead to a change of powers in industries by propelling outsiders that

innovate or otherwise by bringing down current leaders who do not innovate and term this as “*commercialization of radically new products*”.

To stress the importance of innovation outcomes, Tellis, Prabhu, and Chandy (2009) propose an alternative framework as compared to Crossan and Apaydin’s (2010) for linking the key drivers of innovation with its key outcomes, whereby the key drivers comprise labor, capital, government and culture of which all but government operate at both the firm and national levels. The authors note that labor, and especially skilled workforce, is one of the primary drivers of innovation, whereas capital, referring to the financial resources available to the firm, can only translate into innovation as an outcome if the resources are employed in the right investments. Government is also considered a key driver of innovation thus reflecting the importance of the external environment on the capacity of a firm to innovate and grow. Finally, culture is defined as the core set of attitudes and practices that are shared by the members of a collective entity such as a firm, and is hence considered to be the most effective key driver of innovation as it creates the environment that fosters innovative actions.

Tellis, Prabhu, and Chandy (2009) advise that firms must focus on outputs such as radical innovation rather than merely inputs such as patents, and conclude that the battle is a cultural one and it is from within, whereby to be innovative and grow, a firm must not only focus on the glories of the past and should not be afraid of taking risks, which could, in some extreme situations, involve cannibalizing past successes for new ones to ensure continuous growth.

Birkinshaw and Hamel (2008) bring focus on management innovation and shed light on the aspects of novelty and organizational change by defining it as “*the invention and implementation of a management practice, process, structure, or*

technique that is new to the state of the art and is intended to further organizational goals” (Birkinshaw and Hamel, 2008, p. 825). The authors also confirm that for a management innovation to lead to competitive advantage, it needs to be valuable, rare, and hard to imitate, a hypothesis which was originally proposed by Barney, J. B. (1991) in his work ‘Firm Resources and Sustained Competitive Advantage’.

Management innovation defined as such falls under the category of innovation as a process and comprises, according to Birkinshaw and Hamel’s framework (2008), four processes of motivation, invention, implementation and theorization and labeling in which both the actions of internal change agents, i.e. the employees of innovating company, and external change agents, i.e. entrepreneurs and independent consultants and academics, play a role within the organizational and external environment contexts. While the first phase of *motivation*, as defined by Birkinshaw and Hamel (2008), pertains to the conditions that allow change agents to instigate change, the second phase of *invention* is the first phase where a hypothetical new practice or process as per the definition of management innovation is first tested or put to experiment. *Implementation*, on the other hand, is when the new idea first becomes fully operational after the initial experiment. Finally, Birkinshaw and Hamel (2008) present the final phase of *theorization and labeling* as the phase when the new idea is retained and institutionalized within the organization. Birkinshaw and Hamel (2008) point out that the process of management innovation is not always linear and does not always proceed with the sequence of the four phases above.

Zhou and Wu (2010), on the other hand, present the role of technological capabilities on the introduction of new products within the context of product innovation. The authors define innovation by citing Garcia and Calantone (2002) as “*the*

generation and/or acceptance of ideas and processes that are new to the company” (Zhou and Wu, 2010, p.547). Based on this definition, the authors conclude that innovative activities are bounded by existing processes and routines within the organization. Technological capabilities, on the other hand, are defined by citing Afuah (2002) as the *“firm’s ability to employ various technologies”*. Similar to Birkinshaw and Hamel (2008), Zhou and Wu (2010) also underline the importance of innovation in achieving competitive advantage and note that technological capabilities which are embedded in a firm’s organizational routine become more valuable, inimitable, and non-substitutable with time and increase a firm’s absorptive capacity, which is defined as *“a firm’s ability to recognize the value of new information, assimilate it and apply it to commercial ends”* (Zhou and Wu, 2010, p.548).

Zhou and Wu (2010) further distinguish between explorative and exploitative innovation and define the former as *“the search and pursuit of completely new knowledge and skills in product development”* (Zhou and Wu, 2010, p.548), while the latter is defined as *“the use and refinement of existing knowledge and skills in product development”* (Zhou and Wu, 2010, p.548). The paper concludes that technological capabilities accelerate the rate of exploitative innovation, but have an inverted U-shaped relationship with explorative innovation, whereby very high levels of technological capability impede rather than enhance exploration, since the firm becomes entrenched in its current technological trajectory or even finds it difficult to “unlearn” what it already possesses and to adopt an alternative mindset for assimilating new knowledge. As such, the paper concludes that dynamic capabilities and strategic flexibility are key to allow firms to adapt to shifting external conditions.

Roper, Du, and Love (2008) shed light on the transformation of innovation inputs into productive outputs by defining the innovation value chain as “*the recursive process of knowledge sourcing, transformation, and exploitation*” (Roper, Du and Love, 2008, p.1). The paper notes that a firm’s resources, prior knowledge and other characteristics such as human resource management, which is an indicator of a firm’s knowledge utilization capacity, determine its efficiency in translating sourced knowledge into product and process innovation.

Within the context of external search and knowledge sourcing, **Laursen and Salter (2014)** shed light on open innovation which is a topic of broad interest currently within the realm of managerial strategy. The paper notes that a firm’s decision to be open to external actors has to do with its appropriability strategy, which is defined as a “*firm’s approach to protect its knowledge against being copied and to appropriate the returns from their innovative activities*” (Laursen and Salter, 2014, p.867). The authors suggest in the paper that, although counterintuitive, and despite the conflicting views in the literature regarding the relationship between the two, openness and appropriability go hand-in-hand.

Huizingh (2011) also covers the topic of open innovation and defines it as “*the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and to expand the markets for external use of innovation, respectively*” (Huizingh, 2011, p.2). Huizingh (2011) presents several classifications of openness by different scholars and claims that within a decade the term open innovation would fade away because it would be fully integrated within the practices of management innovation.

One of the classifications of open innovation presented by Huizingh (2011) is by **Dahlander and Gann (2010)** who indicate two inbound and two outbound processes of open innovation. The inbound processes include sourcing and acquiring depending on the pecuniary nature of the process, while the outbound processes comprise revealing and selling also depending on the monetary nature of the process.

Lee, Olson, and Trimi (2012) take open innovation to the next level of co-innovation, which they denote as the latest stage of the evolution of innovation, whereby they define co-innovation as “*a new innovation paradigm where new ideas and approaches from various internal and external sources are integrated in a platform to generate new organizational and shared values*” (Lee, Olson, and Trimi, 2012, p.817). The authors claim that innovation is directly tied to value creation, and is hence a key strategy for organizations to survive and grow in highly competitive global markets.

Lee, Olson, and Trimi (2012) particularly stress on the fact that value creation is not only for the organization but for all stakeholders including customers, suppliers, partners, governments, and even humanity as a whole, and this reveals that, with globalization and other network effects and trends affecting global business, open innovation and lately co-innovation are becoming the only choices for organizations to keep up with the race towards maintaining competitive advantage.

Overall, new conceptual developments since the publication of Crossan and Apaydin’s (2010) paper contributed, in addition to alternative frameworks (Tellis, Prabhu, and Chandy, 2009), to new insights to the concept of innovation in the areas of management innovation (Birkinshaw and Hamel, 2008), innovation value chain (Roper, Du, and Love, 2008), technological capabilities (Zhou and Wu, 2010), open innovation

(Dahlander and Gann, 2010, Huizingh, 2011, and Laursen and Salter, 2014) and co-innovation (Lee, Olson, and Trimi, 2012).

Besides the overall conceptual development of the organizational innovation model, several authors addresses specific parts of the existing model, as depicted in

Figure 4 below and explained in the following sections:

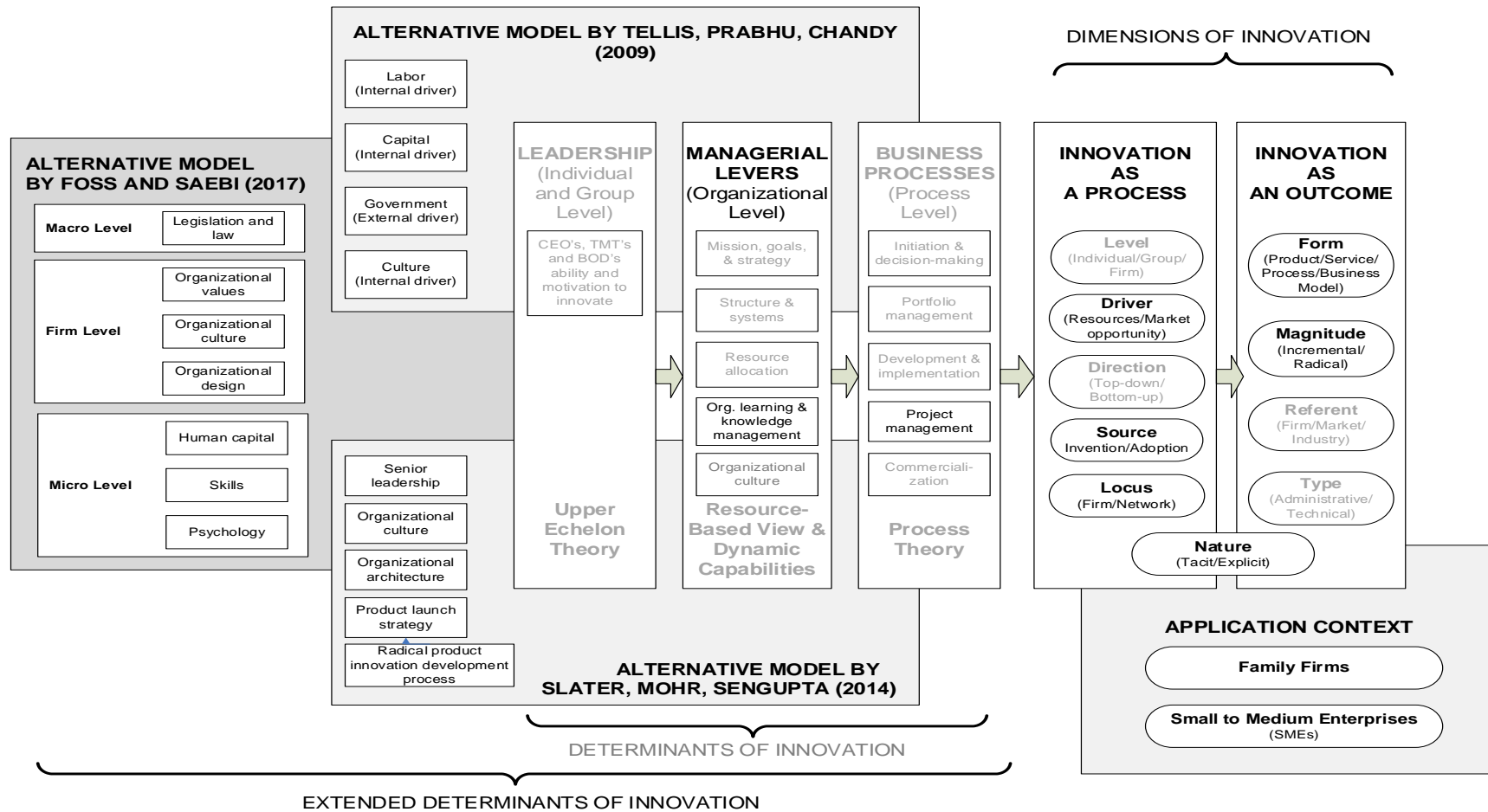


Figure 4: Developed and Extended Framework of Organizational Innovation (Originally by Crossan and Apaydin, 2010)

B. Organizational Capabilities

Organizational capabilities, covered by the dynamic capabilities theory, fall under the managerial levers determinant of innovation under Crossan and Apaydin's framework (2010), and several new contributions have been made to this effect by the papers selected from the available literature of the past ten years

Teece (2007) focuses on dynamic capabilities as one of the micro foundations of sustainable enterprise performance because dynamic capabilities, as defined in the paper, are difficult to develop and replicate/imitate. Teece's (2007) definition of dynamic capabilities divides it into the capacity to sense and shape opportunities and threats, to seize opportunities, and to reconfigure the tangible and intangible assets of a firm such that competitiveness is maintained, and in doing so innovation is said to be the name of the game.

Teece (2007) further proposes two measures and yardsticks of dynamic capabilities, with the first being technical fitness and the second being evolutionary fitness. While the former refers to effectively performing assigned functions, the latter refers to the ability to adapt and even shape the external environment to make a living for the firm and this reflects entrepreneurial behavior to a very high extent.

Schilke (2014) puts more focus on the external environment and the context by noting that the value created by a firm's dynamic capabilities and its conversion to competitive advantage depends to a certain extent on the degree of dynamism of the industry in which the dynamic capabilities are deployed. Based on the research performed, Schilke (2014) concludes that dynamic capabilities lead to competitive advantage when the dynamism levels in the industry are intermediate such that a firm can easily apply organizational changes that proved successful in the past to recurring

similar environmental states. The chances of achieving competitive advantage significantly decrease when dynamism levels in the industry are low such that the costly development of dynamic capabilities becomes unjustifiable. This is also the case when dynamism levels are high such that change is so frequent and unpredictable that it is difficult to match firm routines to environmental states referred to as the '*matching problem*', or to assure that successful results will be obtained by disregarding small nuances and normalizing situations referred to as the '*inertia problem*'.

Camison and Villar-Lopez (2014) focus on technological capabilities and its relationship with organizational innovation and how both lead to superior firm performance. The main basis of the paper is the resource based view of the firm (RBV), which states that firms gain competitive advantage only if they have certain resources and capabilities which would allow them to achieve superior performance. Moreover, according to the RBV theory, a capability refers to the deployment and reconfiguration of resources to improve productivity and achieve strategic goals, whereas technological capability, in specific, refers to the ability to perform certain technological functions and operations effectively. The authors define organizational innovation as concerning "*changes in organizational structure and human resource practices*". Camison and Villar-Lopez (2014) link the two by stating that administrative and organizational innovation promotes technological innovation, and add that new organizational practices lead to the generation of process innovation, which in turn acts as a mediator and transforms into product innovation, which directly translates into firm performance. The managerial implication that the authors hint at is that firms benefit from investing in their capacity for management innovation, which eventually transforms into superior

performance through technological innovation, process innovation, and product innovation sequentially.

Wang and Ahmed (2007) also start off from the resource based view of the firm and consider the notion of dynamic capabilities to complement the RBV by stating that fundamentally, it is the VRIN (valuable, rare, inimitable, and non-substitutable) resources of a firm that lead to performance and profitability, but a firm also needs to possess distinctive capabilities that allow it to make the best use of its VRIN resources and transform them into competencies matching the requirements of the changing external environment.

Wang and Ahmed (2007) define dynamic capabilities as “a firm’s behavioral orientation constantly to integrate, reconfigure, renew and recreate its resources and capabilities and, most importantly, upgrade and reconstruct its core capabilities in response to the changing environment to attain and sustain competitive advantage”. Wang and Ahmed (2007) identify three component factors which reflect the common features of dynamic capabilities, namely adaptive, absorptive, and innovative capability. While adaptive capability refers to a firm’s ability to identify and capitalize on emerging market opportunities, absorptive capability refers to the ability to evaluate and utilize outside knowledge to transform it into firm-embedded knowledge. Innovative capability, on the other hand, refers to a firm’s ability to develop new products and/or markets through an alignment of strategic orientation (differentiation or cost leadership) with innovative processes.

Davies and Brady (2016) cover organizational capabilities in relation to project capabilities with the former relating to the strategic level and the latter having to do with the operational level.

Within the realm of project capabilities, the authors distinguish between unique and repetitive projects and state that project capabilities refer to the routines developed through unique and first-of-their-kind projects to form a subset of operational capabilities that can be applied to recurring repetitive projects.

Moving to the strategic level, Davies and Brady (2016) define dynamic capabilities as “*identifiable management and organizational processes required to implement strategies, create innovation and adapt to an evolving environment*” (Davies and Brady, 2016, p.8) based on the resource based view of the firm and evolutionary theory. Whereas in the RBV approach dynamic capabilities refer to the reconfiguration of internal resources to deal with rapidly evolving external environments, evolutionary theory emphasizes on learning and adapting to changing conditions. The authors also refer to O’Reilly and Tushman (2008) to note that organizational ambidexterity is also a form of dynamic capability, whereby the ability of a firm to simultaneously explore and exploit can allow it to adapt to the evolving environment.

The authors conclude that the relationship between project and dynamic capabilities is reciprocal, recursive and mutually reinforcing, noting that firms rely on dynamic capabilities to know when and how to maintain current project capabilities and when to modify and replace them depending on the external environment conditions.

As such, we observe that the theory of organizational capabilities feeding into the determinant of managerial levers has been widely studied throughout the past decade. The subject papers have contributed to new developments pertaining to the measures and yardsticks for dynamic capabilities (Teece, 2007), to the features of dynamic capabilities, namely adaptive, absorptive (related directly knowledge management) and innovative capabilities (Wand and Ahmed, 2007), to the contextual

relationship between firm dynamic capabilities and industry dynamism levels (Schilke, 2014), to technological capabilities (Camison and Villar-Lopez, 2014), and to project capabilities connecting strategy to operations or business processes (Davies and Brady, 2016). Some of these publications also consider organizational ambidexterity, to be covered in later sections of this project as one of the forms of innovation as an outcome, as a dynamic capability (Davies and Brady, 2016).

C. Knowledge Sourcing/Creation

As mentioned in the previous sub-section of this project, knowledge management is covered under the theory of dynamic capabilities in the framework devised by Crossan and Apaydin (2010), and is considered one of the determinants of innovation as it pertains to the use of formal idea generation tools and the acquisition of external knowledge through linkages with external players such as universities, other firms, and even customers. Knowledge sourcing, on the other hand, is itself one of the dimensions of innovation as a process, as it covers ideation which is an internal source of innovation, and adoption which is an external source of innovation invented outside the firm.

During the past ten years covered by this literature review, several papers were published on this topic contributing to further development of understanding of knowledge management as one of the drivers of innovation, and knowledge sourcing and open innovation as one of the dimensions of innovation as a process.

Leiponen and Helfat (2010) cover the idea of open innovation and knowledge sourcing and link the breadth of knowledge search to the innovation success achieved by noting that to reduce risk and increase the chances of success, firms must widen their

search net and “attack” in a variety of directions be they geographic locations, technological domains, or the like.

Palacios, Merigo and Soto-Acosta (2015) focus on knowledge sourcing through online social networks, which have become an important source of information, and which can be used to develop innovation competences and enhance or complement basic marketing capabilities and competencies for firms. Based on a questionnaire and survey of 197 firms, the authors find that there is a significant positive relationship between online social networks and innovation capacity. Palacios, Merigo and Soto-Acosta (2015) conclude based on the questionnaire that innovation capacity can be enhanced by the strategic use of online social networks, whereby knowledge sourced via social networks can be leveraged and converted into useful outputs for a firm in the form of improved or new products and/or services or in the form of opportunities to target new markets and attract new segments of customers.

Nonaka and Von Krogh (2009) tackle innovation and organizational knowledge creation and distinguish between two types of knowledge that are essentially inseparable, namely tacit and explicit knowledge, with the former referring to knowledge that is related to senses and physical experiences, and the latter referring to knowledge that is uttered and captured in writing or drawing. The authors also note that innovation and knowledge creation are best analyzed by considering work teams, whereby team size, prior experience of team members in working together, and the diversity of their individual knowledge domains impacts the ability to innovate.

West and Bogers (2014) exhibit a four-phase model for the process of leveraging external sources of innovation namely *obtaining*, *integrating*, *commercializing external innovations* as well as *interacting* with the sources of these

external innovations. The authors also shed light on the importance of considering business models and their role in facilitating open innovation relying on external upstream sources of innovation as opposed to traditional inter-organizational innovation which utilizes corporate R&D.

West and Bogers (2014) define the first phase of obtaining external innovation as the phase which is driven by the need to have access to capabilities not available within the firm, and by the motivation to improve efficiency mainly through economies of scale. The obtained knowledge might as well be an actual innovation, technical knowledge, market knowledge, or any useful information that might support the firm's innovation efforts. The phase of integrating external innovations takes into account inter-organizational cultural factors which might act as barriers to or alternatively facilitators for enabling internalization. The phase of commercializing refers to the value created by the external source of innovation and is the most related to a firm's business model, whereas the fourth phase of interaction refers to the reciprocal innovation processes between the firm and the external sources including co-creation, collaboration, and community innovation. However, the authors explain that despite the model seeming to be linear there can be reverse flows and the interaction phase can occur at any point of the innovation process.

West and Bogers (2014) also note, through their review of the available literature, that a firm's absorptive capacity is an important factor affecting its capability to benefit from external sources of innovation because absorptive capacity speeds up the integration and commercialization phases of external innovation. On the other hand, firms with strong internal R&D capabilities are less likely to seek external sources of innovation and are more likely to reject the integration of external technologies into

their system because of the “not invented here” syndrome, although another viewpoint exists which states that external sourcing can actually improve the internal R&D capabilities.

Overall, the selected papers contributed to new developments related to the relationship between knowledge search breadth and innovation success (Leiponen and Helfat, 2010), the strategic use of social networks (Palacios, Meigo, Soto-Acosta, 2015), the tacit versus explicit nature of sourced knowledge (Nonaka and Van Krogh, 2009), and new models for leveraging external innovation sources (West and Bogers, 2014).

D. Product Innovation

A specific form of innovation outcome, product innovation, was tackled in several new papers on this subject.

Slater, Mohr and Sengupta (2014) present product innovation as one of the main keys to organizational renewal and success in dynamic environments, further noting that successful firms increase their research and development spending during recessions and economic downturns to ensure long term success. The authors also distinguish between radical and incremental innovation and shed light on the organizational components that lead to innovation, including senior leadership, organizational culture, organizational architecture, radical product innovation development process, and product launch strategy. This framework is itself an alternative framework to the determinants of innovation as introduced by Crossan and Apaydin (2010).

Within the realm of organizational culture, Slater, Mohr and Sengupta (2014) distinguish between responsive and proactive firms with the former focusing on solving

current customer problems and needs leading to incremental innovation, and the latter anticipating latent and unarticulated customer needs leading to radical innovation. The authors also note that technological progress is an important source of radical innovations, and distinguish between exploratory and exploitative learning with the former being associated with radical innovation.

Similar to Tellis, Prabhu, and Chandy (2009), Slater, Mohr and Sengupta (2014) shed light on a firm's willingness to cannibalize, and state that such willingness allows firms to develop radical innovation which subsequently helps in staying ahead of competitors.

Labrecque, Wood, Neal, and Harrington (2017) approach product innovation from a different perspective, whereby they shed light on the habit slips of customers, which are considered one of the main "drivers" of customer resistance to new products as they unintentionally slip back to using older products they are used to. Habit slips, according to the authors, plays an important role in the success of new products introduced in the market. The authors also note that habit slips not only play a role post-purchase but even during or before purchase, and as such, the paper states that in launching new products, managers should consider customer habits to make sure the new product not only does not conflict with existing habits but also becomes embedded in such existing habits.

Overall, based on the literature of the past ten years, product innovation is viewed as a crucial form of innovation to seek after during times of economic downturn whether it leads to radical or incremental product innovation (Slater, Mohr, and Sengupta, 2014), while always accounting for customer habits and their role in shaping new products (Labrecque, Wood, Neal, and Harrington, 2017).

E. Business Model Innovation

Other than product innovation, business model innovation (BMI) is another specific and more complex type of innovation outcome which was tackled in several new papers as a trending topic, especially given that the existing literature on the topic before the decade under consideration was much smaller according to several of the papers discussed below.

According to **Foss and Saebi (2017)** business model innovation transcends the three traditional types of process, product, and organizational innovation. The authors quote Teece (2010) to define business model as “*the design or architecture of the value creation, delivery, and capture mechanisms of the firm*” (Foss and Saebi, 2017, p.201), whereas business model innovation is presented as “*a holistic form of organizational innovation that warrants theory building, operationalization, and testing*” (Foss and Saebi, 2017, p.201).

Foss and Saebi (2017) note that although the literature is rich with business model related topics, nevertheless, the size of business model innovation literature is considerably small. Based on the comprehensive review carried out on the available literature, the authors classify business model innovation in terms of scope and novelty into four dimensions as presented in

Table 3 below, whereby modular change includes smaller scale changes as compared to architectural changes which involve a change of the complete business model as a whole.

	Scope		
Novelty		Modular	Architectural
	New to firm	Evolutionary BMI	Adaptive BMI
	New to industry	Focused BMI	Complex BMI

Table 3: Business Model Innovation Typology (Foss and Saebi (2017))

Foss and Saebi (2017) list some sample types of business model innovations, which include acquisitions, partially laying off parts of the workforce, and relying more on external suppliers, and they differentiate between macro level, firm level and micro level moderators, which have an impact on the strength of the effect of such business model innovations. As an alternative framework to those of Crossan and Apaydin (2010) and Tellis, Prabhu, and Chandy (2009), Foss and Saebi (2017) define the macro level moderators to include legislation and laws, firm level moderators to comprise organizational values, culture and design, and micro level moderators to include human capital, skills, and psychology.

Chesbrough (2010) further emphasizes the importance and relation of business model innovation to the traditional types of innovation by stating that it is the ability to innovate the business models through which all other innovations pass as inputs that helps a firm commercialize its new offerings, which, taken by themselves, would not yield the same exploitation outcome, since technology by itself has no economic value. The paper goes as far as saying that “*a mediocre technology pursued within a great business model may be more valuable than a great technology exploited via a mediocre business model*” (Chesbrough, 2010, p.355).

Chesbrough (2010) defines business model and states that it articulates the value proposition, identifies a market segment and the corresponding revenue generation mechanism, defines the structure of the value chain, estimates the cost structure and profit potential, describes the position of the firm within the value network between suppliers and customers, and formulates the competitive strategy of the innovating firm (Chesbrough and Rosenbloom, 2002).

Chesbrough (2010) also states that, despite being vital, business model innovation is very difficult and challenging with the root of the tension being the resistance to the new configuration because of the “dominant logic” of the underlying configuration of assets and resources that prevails the current model. One way around such challenge, notes Chesbrough (2010), is to adopt maps of business models and simulate different configurations and experiment with them and effectuate before actually committing to them in reality and this could prove vital because it could point towards previously latent opportunities.

Johnson, Christense and Kagermann (2008) also underline the importance of reinventing a firm’s business model by stating that “*one secret to maintaining a thriving business is recognizing when it needs a fundamental change*” (Johnson, Christense and Kagermann, 2008, p.59). The authors further mention that despite over 50% of executives believing in the importance of business model innovation, only a few actually engage in innovation investments focused on new business models with the main reasons being the lack of study done into the dynamics and processes of business model development and the lack of understanding of the existing business model well enough.

Johnson, Christense and Kagermann (2008) define business model as consisting of four interlocking elements namely *customer value proposition* or job-to-be-done (CVP), *profit formula* or value creation for the company itself, *key resources* mainly comprising the assets of the firm such as technology, people, products, and *key processes* including operational and managerial processes. The authors state that a new business model would be needed when changes are needed to all four elements, and when the game-changing feature is not only with respect to the company but also to the industry or the market. Johnson, Christense and Kagermann (2008) summarize these into five strategic circumstances including the opportunity to address the needs of large groups of potential customers currently shut out of the market entirely, the opportunity to bring into focus a job-to-be-done focus when one does not yet exist, the opportunity to capitalize on a brand new technology, the need to fend off low-end disrupters, and the need to respond to a shifting basis of competition.

Amit and Zott (2012) also shed light on the recent move in favor of new business models over new products and services as a source of future competitive advantage. They define a company's business model as a "*a bundle of specific activities – an activity system – conducted to satisfy the perceived needs of the market, along with the specification of which parties (a company or its partners) conduct which activities, and how these activities are linked to each other*" (Amit and Zott, 2012, p.2), noting that it is more difficult to imitate an entire novel activity system than a single novel product or process.

Amit and Zott (2012), however, provide an alternative view than that of Johnson, Christense and Kagermann (2008), stating that changes to a business model can be subtle without the need to disrupt the whole industry as opposed to the latter's

statement that a new business model should be game changing not only for the company but also for the industry. Amit and Zott (2012) list three ways for business model innovation to occur including the addition of novel activities through forward or backward integration, for example, which they define as “content”, the linking of activities in novel ways, which they define as “structure”, and the changing of one or more parties that perform activities, such as franchising, which they define as “governance”.

Amit and Zott (2012) further identify four major value drivers of business models which are highly interlinked and which include *novelty*, *lock-in* referring to switching costs, *complementarities*, and *efficiency* referring to cost savings. The authors highlight the importance of complementing between the drivers and looking at the big picture and the overall design rather than optimizing details.

Teece (2010) defines a good business model as one that “*yields value propositions that are compelling to customers, achieves advantageous cost and risk structures, and enables significant value capture by the business that generates and delivers products and services*” (Teece, 2010, p.174), and states that keeping the business model viable is a continuing task since business models change over time in line with changing markets, technologies and legal structures.

Teece (2010) explores the connection of business models to business strategy, innovation management and economic logic, and states that strategic analysis is an essential step in designing a competitively sustainable business model, and that innovation would fail no matter how remarkable it is if it is not deeply rooted in a business model, which offers a compelling value proposition to customers and sets up a profitable system for the enterprise itself.

Zook and Allen (2003) concentrate on the growth of businesses outside their core by underlining the concepts of adjacency and repeatability that allow the growing firm to better exploit the opportunities for growth and, even more importantly, to outgrow rivals and sustain the growth. The adjacency moves referred to by Zook and Allen (2003) include expanding along the value chain, growing new products or services, using new distribution channels, entering new geographies, addressing new customer segments, and moving into ‘white space’ by building on a strong capability, which is the rarest and most difficult adjacency move.

Zook and Allen (2003) also point out that discipline is needed in such growth strategies with the importance of never putting the core business at risk and pursuing one adjacency move at a time, noting that diversification leads the company far away from its core business.

The importance of the repeatability factor, on the other hand, is underlined through the *learning curve effects* which systematize the process, the *reduced complexity* which would otherwise strangle growth, the *gained speed* which helps outperform rivals, and the *strategic clarity* which is vital for retaining employee loyalty (Zook and Allen, 2003).

In conclusion, business model innovation (BMI) is considered a more complex form of innovation outcome and is observed by many as the prerequisite for the other traditional forms of product, process or organizational innovation (Foss and Saebi, 2017, and Chesbrough, 2010). The recent publications on the topic have contributed to new developments related to classification of BMI and the identification of its moderators (Foss and Saebi, 2017), as well as the challenges facing BMI and the solutions for those challenges including business model maps which could simulate the

outcomes and point towards latent opportunities (Chesbrough, 2010). Recent papers also contribute by focusing on the circumstances necessitating BMI, whether they lead to disruptive or subtle changes, (Johnson, Christense, and Kagermann, 2008, and Amit and Zott, 2012) or, in some extreme situations, to diversification (Zook and Allen, 2003). Finally, several publications including Teece (2010) highlight the importance of linking between BMI and business strategy, innovation management, and economic logic to ensure successful outcomes, and this prepares the ground to next discuss the organizational ambidexterity dimension as being the combination of simultaneous exploration and exploitation activities which leads us to consider it as a form of innovation outcome for the purpose of this project.

F. Organizational Ambidexterity

Given that an organization's long-term success depends on its ability to exploit its existing capabilities while simultaneously exploring new ones for future exploitation, **Raisch and Birkinshaw (2008)** develop a comprehensive framework that integrates the various insights from prior research into the antecedents, moderators, and outcomes of organizational ambidexterity, which is defined as an organization's ability to be aligned and efficient in its management of today's business demands, while simultaneously being adaptive to changes in the environment.

Raisch and Birkinshaw (2008) note that organizational ambidexterity can be tackled within various contexts namely organizational learning (exploitation vs. exploration), technological innovation (incremental vs. radical), organizational adaptation (continuity vs. change), strategic management (induced vs. autonomous), and organizational design (standardization vs. flexibility).

In their framework, Raisch and Birkinshaw (2008) list structure (spatial separation vs. parallel structures), context (discipline and support) and leadership (senior management involvement) as the main organizational antecedents leading to ambidexterity fairly in line with Crossan and Apaydin's (2010) framework determinants, while environmental factors including environmental dynamism (encouraging explorative activities) and competitive dynamism (necessitating exploitative activities) are also shown to influence ambidextrous behavior, in addition to other moderators such as market orientation (customer and competitor orientation), resource endowment (availability of resources) and firm scope (size and focus of firm and hierarchical levels).

Finally, Raisch and Birkinshaw (2008) state the premise that ambidextrous behavior leads to better performance, which is exhibited in increasing sales growth rate.

Raisch et al. (2009) take a further glance at the positive association between organizational ambidexterity and firm performance and closely study four interrelated "central tensions" related to such ambidexterity or ability to simultaneously exploit and explore for sustained performance.

Raisch et al. (2009) refer to the first tension as that of differentiation vs. integration, with the former referring to the complete separation of exploitative and explorative activities into separate units within the organization, and the latter considering a rather simultaneous approach within one business unit. Based on the available literature, Raisch et al. (2009) conclude that differentiation and integration are actually complementary and the relative balance between the two should be decided by the management of a firm based on the relative importance of the two activities. The second tension is that of the level at which ambidexterity reveals itself in a firm i.e. at

an individual or an organizational level. The authors reveal that ambidextrous managers manage conflicting goals and fulfill multiple roles, while engaging in paradoxical thinking based on their individual capabilities, but only if supported by organizational contexts. The authors also conclude that the overall organizational ambidexterity is influenced by the individual ambidexterity of its members, but is more than the sum of those individual parts.

The third tension has to do with the static or dynamic perspectives of ambidexterity, whereby the former relies on adopting certain static configurations to allow exploitation and exploration, whereas the latter considers a sequential approach. The authors find, based on the literature, that managing ambidexterity is a dynamic rather than static alignment task.

Finally, the fourth tension that Raisch et al. (2009) tackle has to do with the internal vs. external perspectives of ambidexterity as related to the sourcing of knowledge and the authors reveal, based on the available literature, the importance of acquiring external knowledge externally and integrating it flexibly via absorptive capacity within the organization's boundaries.

Andriopoulos and Lewis (2009) similarly study the challenging exploitation-exploration tensions faced by innovating organizations and propose a framework for the management of these tensions, which is at the core of ambidextrous organizations. The authors explain, based on available literature, that innovation is a tug-of-war between internal exploitation, which might lead to “competency traps” when a firm focuses on immediate profits resulting in stagnating future prospects, and external exploration, which might lead to “failure traps” when a firm seeks after future opportunities at the expense of current operations and profits.

Andriopoulos and Lewis (2009) state, based on their empirical study, that there are opposing forms or poles of innovation in any firm and these forms reveal themselves in three highly robust tensions and paradoxes. The first paradox is that of strategic intent between the poles of profits and breakthrough, whereby a firm seeks either profits or creativity. The second paradox is that of customer orientation, whereby a firm has the choice of being tightly coupled to customer needs and wants, or alternatively adopting a loose coupled approach and embracing freedom and future possibilities in product development. The third paradox is that of personal drivers, which include discipline on the one hand and passion on the other, with the former powering execution and the latter mobilizing creative expression.

Andriopoulos and Lewis (2009) propose a management framework for the aforementioned paradoxes, which revolves around three factors namely a multilevel approach, complementary tactics and learning synergies. The multilevel approach is founded on the fact that the three paradoxes are interwoven across the different levels of an organization i.e. the strategic paradox is mainly at the firm level, the customer orientation paradox is at the project level, while the personal drivers paradox is at the organization's members' level, and hence managing these paradoxes across the different levels distributes the responsibility among the different players. The complementary tactics are important since managing the three paradoxes involves a mix of integration and differentiation tactics, with the latter being important to give a clear focus to actions, and the former helping to accentuate the importance of both poles of exploitation and exploration. The learning synergies is the final factor for sustaining ambidexterity, which is characterized by absorptive capacity allowing a firm to learn

from both the exploitation and exploration efforts, and thoroughly utilize the resulting knowledge base.

O'Reilly and Tushman (2008) present ambidexterity as a dynamic capability in resolving the innovator's dilemma when confronting disruptive changes, and conclude that innovation and efficiency are not necessarily trade-offs but can be simultaneously pursued, noting that being large and successful at one point in time is not a guarantee for continued survival. The authors define dynamic capabilities as the ability of a firm to reconfigure assets and existing capabilities" for long term competitive advantage, while ambidexterity is defined as "*the ability of a firm to simultaneously explore and exploit thus enabling a firm to adapt over time*" (O'Reilly and Tushman, 2008, p.2). Based on the available literature, the authors further quote that "*ambidexterity as a dynamic capability is not itself a source of competitive advantage but facilitates new resource configurations that can offer a competitive advantage*" (O'Reilly and Tushman, 2008, p.30).

Given the challenges faced by firms when attempting to simultaneously explore and exploit, the authors answer the question of when ambidexterity should be considered by presenting a 2x2 matrix categorizing opportunities, especially those opportunities which tempt the organization to move beyond its core, by their operational leverage i.e. the possibility to benefit from existing firm assets (sales channels, resources, manufacturing, technology platform, etc.) or not on the one hand, and their strategic importance for the firm on the other hand. Based on the presented matrix, O'Reilly and Tushman (2008) conclude that if an opportunity is neither strategically important nor able to benefit from the firm's existing resources, it is better to spin it out. On the other hand, if an opportunity is of strategic importance but does not leverage

existing resources and capabilities, it is better to establish an independent business unit for it, while if it is the opposite case, i.e. it is capable of benefiting from existing resources but is not of strategic importance, then it is possible to either internalize or contract out/outsourcing the activity/product. Finally, the fourth quadrant of the matrix refers to opportunities which both pose strategic importance and can benefit from the firm's operational capabilities and assets and, according to O'Reilly and Tushman (2008), it is these opportunities that require ambidextrous designs and approaches, which are empirically associated with increased innovation and higher sales growth.

O'Reilly and Tushman (2008) further conclude that ambidexterity is a leadership task rather than being related to a firm's structure and design, and list five important propositions for ambidexterity, including a clear strategic intent providing intellectual engagement, overarching vision and values providing emotional engagement, an aligned senior team relentlessly communicating a consistent message about the need for ambidexterity, an organizational architecture integrating the exploration and exploitation activities, and an ambidextrous leadership resolving inevitable trade-offs and conflicts whenever they occur.

In conclusion, recent literature has contributed to the topic of ambidexterity by studying its relationship to firm performance and sales growth (Raisch and Birkinshaw, 2008, and Raisch et al., 2009), and classifying its different categories and dimensions (O'Reilly and Tushman, 2008), in addition to defining the different tensions between exploitation and exploration and the management frameworks needed in tackling those tensions (Raisch et al., 2009, and Andriopoulos and Lewis, 2009). Some of the literature has also promoted the hypothesis that ambidexterity, apart from being an

innovation outcome, is a leadership task and is itself a dynamic capability (O'Reilly and Tushman, 2008 and Davies and Brady, 2016).

G. Family Firms

In addition to the above presented developments to Crossan's and Apaydin's determinants and dimensions of innovation, and in line with the central focus of this project, this sub-section and the next sub-section extend the aforementioned framework by adding a contextual layer to it pertaining to innovation in family firms and small to medium sized enterprises.

Nieto, Santamaria and Fernandez (2015) tackle the topic of innovation in family firms, which has not been studied in detail in the past but is seen as an important topic in the recent literature. The authors reveal, based on their research of Spanish firms, that family firms perform fewer innovations and are less likely to rely on external sources of innovation as compared to their non-family counterparts, and are more inclined towards adopting incremental innovation as opposed to radical innovation, mainly due to the fact that they are more conservative, more resistant to change, and more averse to risk.

The authors add that despite the expected negative relation between family involvement and innovation, family firms do have a very high incentive to innovate, since innovation is a source of growth and wealth and is a survival mechanism maintaining the family's fortune and reputation.

Nieto, Santamaria and Fernandez (2015) explain that the aforementioned incentives favor innovation in family firms, however due to factors such as risk aversion, agency costs, and resource constraints, the incentives to innovate remain lower

than those of non-family firms. Similarly, although collaboration and outsourcing might reduce costs due to economies of scale, family firms are not keen on external sourcing since they are afraid of spillovers. Finally, since radical innovation entails exploring new fronts whereas incremental innovation is derived from exploiting the current capabilities, family firms are more likely to adopt the latter to avoid risk and take full advantage of their existing client base with whom they retain very close relations.

Duran et al. (2016) tackle the subject of innovation related to family firms from a different perspective starting off from the shortcoming of the behavioral agency theory in predicting the underinvestment of family firms in innovation and R&D without explaining the reason behind the existence of so many successful family firms worldwide, and the shortcoming of the resource based view of the firm in revealing the resource orchestration advantages of family firms without tackling the reason behind the low levels of investment in innovation inputs by these family firms.

The authors reveal that family firms, which form two-thirds of all firms worldwide, invest less in innovation inputs as opposed to their non-family counterparts because of three factors, namely high level of family control leading to an unwillingness to increase debt level or raise money from the stock market, family wealth concentration leading to risk averseness, and the importance of non-financial goals related to firm reputation. These firms, however, have a higher conversion rate of the innovation inputs into outputs due to more stringent monitoring and better resource orchestration than their non-family counterparts, which explains why family firms still prevail despite their conservative approach and reluctance to invest in innovation.

Duran et al. (2016) also consider firm governance and external environmental context factors in their discussion of family firms and innovation. For instance, within

the realm of firm governance, Duran et al. (2016) tackle the question of whether family firms should try to increase management professionalism, and reveal that having a family CEO increases the negative impact on innovation investment and the positive impact on the transformation rate, since the CEO, as noted by Crossan and Apaydin (2010), has a major say in the firm's strategy shaping and resource allocation decisions, and a family CEO shares the same idiosyncrasies as the family firm and would thus be unwilling to invest much in the absence of an external CEO's drive to stand out in the executive labor market. However, on the other hand, the family CEO acts as a "sophisticated investor" in the sense that he/she closely monitors the resources, sets up organizational learning, and is able to allocate resources that are best fit for a job, and this resource orchestration is a dynamic capability needed to efficiently convert innovation input into innovation output. This, however, is reversed if the family CEO is actually the founder of the firm, since an entrepreneur is a risk taker and welcomes uncertainty by nature, and hence would be more willing to make investment into uncertain innovation inputs, while at the same time a founder CEO is more likely to have growth as a goal more so than control, and as such is slightly less efficient in converting inputs to outputs as compared to a non-founder family CEO.

Tackling the effect of country-level or institutional context factors, Duran et al. (2016) exhibit that higher minority shareholder protection reduces investment into innovation input because the protected minority shareholders act as traders more so than owners and focus more on the short-term financial performance of the firm, thus reducing innovation investment, while the effect of a highly educated workforce on the innovation conversion rate of a firm is much more highlighted in a family firm as compared to its non-family counterparts because of the former's pronounced reliance on

its pseudo-family member employees, who are more loyal and usually have a longer tenure in family firms as opposed to non-family ones.

De Massis, Frattini and Lichtenthaler (2013) also highlight the importance of family firms in the world economy given their prominent existence, and focus on the importance of understanding the effects of family involvement on innovation inputs, activities and outputs. The paper particularly focuses on technological innovation which is considered an important determinant of sustained superior performance, and aims at compiling the existing literature on technological innovation in family firms to study the latter's effect, and reveal any gaps when it comes to the relationship of family involvement on the different steps of technological innovation.

De Massis, Frattini and Lichtenthaler (2013) define technological innovation, based on the existing literature from Freeman (1976), as "*the set of activities through which a firm conceives, designs, manufactures, and introduces a new product, technology, system, or technique*" (De Massis, Frattini and Lichtenthaler, 2013, p.2), and note that there is a significant difference in the antecedents of technological innovation between family and non-family firms due to the varying degrees of risk aversion, long-term orientation, investment horizons, and return expectations, as well as the varying structures of social and human capital.

Based on the existing bibliography, De Massis, Frattini and Lichtenthaler (2013) also find that there is a consistent view that family involvement has a negative effect on innovation inputs, mainly R&D expenditure, due to several reasons including mainly inner family conflicts resulting in agency costs (based on behavioral agency theory), and the myopic risk aversion behavior of family owners. The authors reveal varying findings in the existing literature when it comes to the effect that family

involvement has on innovation outputs, whereby some theories state that tight control resulting from the ownership structure of family firms inhibits innovation (Chin et al. (2009)), whereas other theories refer to a positive association between family involvement and the ability to introduce new products and services mainly as a result of the characteristics of the human, social and marketing capitals of family firms (Llach and Nordqvist (2010)). The paper notes that the least emphasis is given in the existing literature to the relation between family ownership and innovation activities, however, the existing theories point towards a positive association between the two, mainly due to the effect that strategic behavioral control in family firms has on such processes (Hsu and Chang (2011)), and also due to the more flexible decision-making processes in family firms (Craig and Dibrell (2006)).

De Massis, Frattini and Lichtenthaler (2013) also make reference to the effect of family involvement on organizational ambidexterity, which is defined as the firm's ability to combine and balance between heterogeneous goals and tasks (Gedajlovic, Cao, and Zhang (2012)), and state that the overlap of ownership and management in family firms is positively associated with such ambidexterity, while a family firm's ability to best orchestrate its resources in response to changing conditions is considered a dynamic capability that contributes to the firm's ability to explore and exploit innovation opportunities.

Finally, an association is made between family involvement and open innovation, whereby the behavioral theory and the resource based view propose opposing views, with the former hinting at a negative association between family firms and open innovation due to concerns of potential control losses, and the latter revealing that family firms' ability to nurture long-term relationships with stakeholders and their

inclination towards raising the visibility and reputation of the family firm enhance their willingness to cooperate and interact with external parties.

In short, the recent literature has had a consistent view that family involvement has a negative effect on innovation investment and inputs but a rather positive association with the conversion of inputs to outputs, mainly as a result of the risk averseness of family firms and their ability to better orchestrate their resources, which is a dynamic capability that also leads to ambidexterity.

H. Small and Medium Sized Enterprises

Similar to family firms which comprise a big portion of worldwide enterprises, **Gupta and Barua (2016)** note that micro, small and medium sized enterprises (MSMEs) play a crucial role, especially in the economies of developing countries, as they comprise more than 50% of the manufacturing output of the economy (Eniola and Entebang (2015)). The authors further argue that competitiveness depends on innovation maintaining which is not an easy task for MSMEs due to resource constraints, difficult access to advanced technologies, limited access to finance, and difficult regulatory obligations (OECD, 1997). As such, the paper aims at identifying the main enablers of innovation for MSMEs of developing economies, noting that the classification of MSMEs can be in terms of number of employees, revenues, or size of investment in machinery and plants.

Based on the review and research of available literature and a survey of managers/owners of MSMEs, Gupta and Barua (2016) state that access to resources is the most important enabler and stepping stone of innovation for MSMEs, noting that resources take the form of skilled workforce, working capital, knowledge relevant to

work, ownership of latest machinery, tools and equipment, etc. The authors identify the second most crucial enabler as technical know-how which gives access to finances or loans, apart from enabling the correct use and operation of available resources. The third important enabler for innovation in MSMEs of developing nations is related to government policies and programs which could create favorable conditions to development.

Van de Vrande et al (2009) also target SMEs and look into the incidence and apparent trend towards open innovation in these SMEs, knowing that the notion of open innovation was until a short time ago studied mainly in high-tech multi-national enterprises (MNEs). The authors refer to the definitions in the available literature to define open innovation as “*the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and to expand the markets for external use of innovation, respectively*” (Van de Vrande, 2009, p.423), noting that due to so many factors such as labor flexibility, ample venture capital, and widely dispersed knowledge across organizations, firms can no longer afford to closely innovate on their own, but rather need to engage with others in alternative practices of innovation.

Van de Vrande et al (2009) distinguish between technology exploitation and technology exploration as the two dimensions of operationalizing open innovation, with the former referring to activities aiming at better profiting from internal knowledge, and the latter including activities which allow firms to acquire knowledge from the outside. Each of these two have different practices which implies that the management and organization of open innovation is much more complex than that of traditional closed innovation characterized by in-house R&D.

Looking into SMEs, Van de Vrande et al (2009) conclude that innovation is hindered by the lack of resources and the deficiency of past innovation portfolios which makes collaboration and networking behavior crucial for innovation in these SMEs. The authors explore the differences between manufacturing and service SMEs, and conclude that although manufacturing firms, with their physical products being more tangible and homogeneous in nature, are on average more technology-intensive and invest more in R&D and thus adopt open innovation to a higher extent, open innovation is as relevant to service firms as it is to manufacturing ones. On the other hand, focusing on the dimension of size, Van de Vrande et al (2009) conclude that medium sized enterprises (over 100 employees) more commonly apply open innovation than small enterprises (10-99 employees) because the innovation processes in the former are more structured and professionalized.

Van de Vrande et al (2009) finally look into the motives and challenges of open innovation in SMEs and deduce that the most important motive is the fact that SMEs believe that external technology acquisition is critical to serve customers effectively, open up new markets, and maintain growth because the available literature suggests that enterprises collaborate with others to acquire missing knowledge, to spread risks, to reduce costs, and to obtain complementary resources or finance. The most important barriers to open innovation, on the other hand, include the not-invented-here (NIH) syndrome and the lack of internal commitment, as well as “proximity” factors including cognitive, organizational, and cultural differences between the collaborating firms.

Rosenbusch, Brinckmann and Bausch (2011) look further into the relationship between innovation and performance of SMEs given that the resources,

structures, and operations of SMEs are considerably different than those of large firms, and hence the results might vary as well. The authors note that innovation is a task that is characterized by high risk and is highly resource-demanding, which might overstrain resource-scarce SMEs, and while various studies reveal a positive relationship between innovation and performance, many other studies hint that there is no causal relationship between the two, while even others claim negative performance implications of innovation. In the midst of such controversial results in the existing literature and related empirical findings, the authors note that the innovation-performance relationship is overall and in the aggregate positive, but is highly context dependent, which leads to the conclusion that SMEs should focus on the positive moderators leading to performance.

Based on the available literature, Rosenbusch, Brinckmann and Bausch (2011) also conclude that the aforementioned aggregate positive relationship is influenced more by the outcomes of innovation rather than the inputs an SME invests in innovation activities, whereas counterintuitively, and in opposition to the findings of Van de Vrande et al (2009), focusing on internal innovation projects has a stronger positive impact on performance of SMEs as compared to relying on external collaborations and open innovation, since given their small size SMEs might suffer from dominance of external innovation partners, who might dictate the direction, the resources committed, and the benefits shared.

Rosenbusch, Brinckmann and Bausch (2011) further conclude that the positive relationship between innovation and SME performance is more evident in younger SMEs because flexibility is key in the innovation process, but the established routines of mature SMEs might make it more difficult to reconfigure their resources and

organizational settings thus leading their core competences to become core rigidities hampering the innovation process and the resulting benefits.

Finally, Rosenbusch, Brinckmann and Bausch (2011) contradict the existing assumption that countries characterized by individualism provide more fertile ground for innovation by concluding that SMEs in cultures with high levels of individualism benefit less from the link between innovation and performance because, although individualism is beneficial for invention, collectivism is what is needed for commercializing innovative outputs.

Brunswicker and Vanhaverbeke (2015) tackle the topics of open innovation namely knowledge sourcing and performance in SMEs, and note that to successfully benefit from inbound open innovation, regardless of the sourcing strategy used, higher order internal management capabilities are crucial to align the sourced knowledge with the firm's internal innovation activities, especially that SMEs rarely have formal and full-fledged R&D departments in-house, and that poses a difficulty in building absorptive capacity which is essential when sourcing external knowledge. Accordingly, the paper lists the different sourcing strategies that allow SMEs to boost their innovation performance, noting that the diversity and combination of innovation sources rather than their count are the keys to success.

According to Brunswicker and Vanhaverbeke (2015), sourcing can be through interactions with direct and indirect customers, suppliers, universities, network partners and intermediate service providers in the form of experts on intellectual property rights (IPR), and SME sourcing strategies can be clustered based on the interactions they choose to make with one or a combination of these sources. For instance, SME's can be defined as (1) minimal searchers if they rarely interact with any external sources, (2)

supply-chain searchers if they rely mostly on customer and suppliers, (3) technology-oriented searchers if they mostly interact with universities and external experts, (4) application-oriented searchers if they value indirect customers or users the most in terms of accessing “sticky information” to improve their offerings, and (5) full-scope searchers if they show strong interest in collaborating with all sources of external knowledge. According to the authors, their findings indicate that best SME performance is achieved through full-scope search and application-oriented search.

Brunswicker and Vanhaverbeke (2015), however note that, in order for open innovation to translate into performance, internal integrative management practices are a pre-requisite irrespective of the sourcing strategy adopted in order to facilitate and support open innovation in SMEs at both strategic and operational levels namely: (1) long-term innovation investment activities i.e. investment in financial innovation assets, (2) innovation strategy processes including the identification of future opportunities and mapping them to internal competencies, (3) innovation development processes to allow integration of external knowledge, and (4) innovation project control to ensure that innovation projects are carried out within budget, time and at a satisfactory level of performance.

Parida, Westerberg and Frishammar (2012) also study the impact of open innovation on the performance of SMEs, noting that the majority of previous literature covering innovation and performance relationships have considered large firms although many SMEs depend on their own ability to innovate to achieve sustainable competitive advantage. The authors acknowledge the complexities and difficulties faced by SMEs, mainly due to the “liability of smallness”, in pursuing innovation, however,

they assert that most scholars agree that innovation activities are beneficial for SMEs and large firms alike despite their differences.

Parida, Westerberg and Frishammar (2012) note that, despite their limited resources and less structured approach to innovation, SMEs are less bureaucratic, more risk taking, and faster in reacting to market changes, and hence by collaborating with network partners or external knowledge sources they can compensate for the scarcity of resources and fill the technological gaps. As such, the authors identify four inbound open innovation activities, namely *technology scouting*, *technology sourcing*, *horizontal technology collaboration*, and *vertical technology collaboration*, which are all empirically shown to have a positive correlation with performance.

Based on the available literature and the empirical results, Parida, Westerberg and Frishammar (2012) further show that technology scouting, which is defined as the internal search to systematically assess technology trends and track opportunities leads to incremental innovation, similar to horizontal technology innovation, which is defined as collaboration with partners that are not part of the value chain i.e. competitor or non-competitor firms. On the other hand, technology sourcing, i.e. buying or using external technology, as well as vertical technology innovation, i.e. information sourcing from customers or end users, are shown to lead to radical innovation, which represents a firm's ability to develop products that are new to the world or the industry, as opposed to incremental innovation which involves the introduction of products that are new to the firm alone.

In summary, scholars have agreed in recent publications that SMEs have resource constraints (Van de Vrande, 2009, Parida, Westerberg, and Frishammar, 2012, and Gupta and Barua, 2016) and a deficiency of past innovation portfolios which put

them under the liability of smallness and makes in-house innovation challenging and straining. Scholars also concur that SMEs are crucial for the economies of developing country economies, and confirm that there is a positive association between innovation and performance of SMEs and hence underline the importance and the trend towards open innovation in SMEs (Van de Vrande, 2009, Parida, Westerberg, and Frishammar, 2012, and Brunswicker and Vanhaverbeke, 2015). Recent publications also contribute to the hypothesis that the positive association between open innovation and SME performance is highly contextual and requires higher order internal management capabilities and processes (Rosenbusch, Brinckmann, and Bausch, 2011 and Brunswicker and Vanhaverbeke, 2015).

I. Innovation Framework Development

Based on the literature presented in this chapter, this project contributed to developing and extending the overall innovation framework by Crossan and Apaydin (2010).

Overall the recent literature:

1. Enhances the determinants of innovation, mainly those related to the managerial levers, through the general theory literature in addition to the papers on organizational capabilities and knowledge sourcing/management (*sub-sections A, B, and C of this literature review*);

2. Enhances the innovation dimensions namely the components of “driver”, “source” and “locus” under the dimension of innovation as a process, and the components of “form”, “magnitude” and “nature” under the dimension of innovation as an outcome, through the articles under the headings of product innovation, business

model innovation, and organizational ambidexterity (*sub-sections D, E, and F of this literature review*);

3. Extends the framework to cover alternative frameworks pertaining to the drivers of innovation in organizations (Tellis, Prabhu, and Chandy, 2009, Slater, Mohr, and Sengupta, 2014, and Foss and Saebi, 2017);

4. Extends the framework by adding a contextual layer for studying the model covering family firms and small to medium enterprises (SMEs) through the articles covered under the headings of family firms and SMEs (*sub-sections G and H of this literature review*).

Recapping Figure 3 presented earlier in this project and providing a closer up look to the innovation determinants compiled by the alternative frameworks, it can be observed and noted that:

1. All frameworks include culture as a determinant of innovation;
2. Both Slater, Mohr, and Sengupta, 2014, and Foss and Saebi, 2017 included organizational structure (architecture or design);
3. Only Slater, Mohr, and Sengupta, 2014 included processes at the firm level;
4. All alternative frameworks included individual level determinants but only Slater, Mohr, and Sengupta, 2014 included leadership;
5. Both Tellis, Prabhu, and Chandy, 2009 and Foss and Saebi, 2017 included external factors;
6. The only new internal determinants added are individual non-leadership factors.

CHAPTER IV

IMPLEMENTATION: CASE STUDY

PROFICO: THE WAY FORWARD

A. Disclaimer

The following case was written solely to provide material for class discussion reflecting an existing situation in a real Lebanese family small enterprise with no intention to illustrate either effective or ineffective handling of a managerial situation, noting that the case may have disguised certain names and other identifying information to protect confidentiality.

This part of the project may not be transmitted, photocopied, digitized, or otherwise reproduced in any form or by any means without the permission of the copyright holder if it is published any time in the future, unless such reproduction is done by the American University of Beirut for the whole project as authorized under the release form of this project.

B. From Theory to Practice

This case has been included in this project as a practical implementation of the topic of organizational innovation as it tackles several of the main headings covered under the literature review of the previous chapter including organizational capabilities, knowledge sourcing and management, product innovation, business model innovation, innovation in SMEs, and innovation in family firms.

In specific, the case presents an **external technology sourcing** opportunity handed to a **small-sized** Lebanese **family firm** working within the aluminum and glazing contracting industry, which, as a part of the overall real estate and construction industries in Lebanon, has been suffering from the recent economic downturn and the political turmoil in the region. The firm is tightly controlled by the owning family and is a typical example of resource-tight small firms that need to carefully **orchestrate their available resources** to innovate and perform. In particular, the case is that of a growth opportunity outside the core business activity carried out by the company, and hence it tackles both **product innovation** and **business model innovation** topics.

C. Introduction

On Saturday, June 03, 2017, Henry Hajj, the General Manager of Profico, an aluminum and glazing contracting company located in Beirut, the capital of the Republic of Lebanon, was attending the graduation ceremony of his son at the American University of Beirut, while thinking about the success prospects of the new investment opportunity he had just been presented with for acquiring a new production line for processing glazing panels.

Profico, established in 1988, assembled and installed aluminum and glazing doors and windows as well as aluminum composite panels for local construction projects in Lebanon. Profico had seen an increasing growth of revenues over the years, but revenues had been decreasing for the past four years as a result of the regional political turmoil that had greatly impacted the construction industry in the country. As a result of the downturn, Profico had also seen its employees leaving for other competitors of bigger size.

Alex Hajj, H. Hajj's eldest son, was about to receive his Bachelor degree in Civil and Environmental Engineering but was already actively involved in their family business. Both H. Hajj and A. Hajj had deliberated heavily when presented with the opportunity to invest in the new production line to test the prospects of expanding their scope into manufacturing. They both knew that to reverse the decreasing trend of revenues in the prevailing political and economic conditions, they needed to take further steps both internally in terms of managing resources, and strategically in terms of deciding in which direction to take the company forward.

As he waited for his son to walk on stage and receive his diploma, H. Hajj kept thinking. How could Profico improve the internal human resource (HR) management and resource allocation practices to ensure key employee and client retention? Could Profico mine a new source of revenues and reverse the recent revenue downturn by purchasing the new production line for processing glazing panels? Should the company seek after revenue growth by focusing on their core business of assembling and contracting, or by delving deeper into the new manufacturing venture they were presented with? Should the family inject more capital into the business to finance these growth prospects, or should these be financed by debt to be paid from the company's business operations and related earnings?

D. Macro-Environment Overview of Lebanon¹

Lebanon is a mountainous country of 10,452 square kilometers located on the eastern shore of the Mediterranean Sea bordered by Syria from the North and the East, and Israel from the South. After its independence from the French mandate in 1943, Lebanon went through three prosperous decades up until 1975 when a civil war broke in the country greatly damaging the economic infrastructure and lasting until the early 1990's when the Taef ²agreement was signed to proportionally distribute political and ruling power among the 18 officially recognized sects forming the country. The political situation went on to be relatively stable internally, despite the presence of Syrian troops across the country and Israel's occupation of the South up until 2000. However, Lebanon went through another period of unrest in 2005 following the assassination of Prime Minister, Rafic Hariri, followed by several other attempts of assassinations of political figures in the country over the next few years. The country also went through a 33-day war inflicted by the state of Israel in July 2006, which greatly damaged the country's infrastructure.

In addition to the internal political turmoil and the 33-day July 2006 war, Lebanon was highly affected by the Syrian conflict which started in 2011 and intensified in 2014 with the intervention of several large countries and coalitions. This impacted Lebanon even more greatly because the country suffered a 2-year spell

¹ This section was prepared using data from "Lebanon," CIA World Factbook 2017, https://www.cia.gov/library/publications/the-world-factbook/geos/print_le.html , and "About Lebanon," UNDP Lebanon 2017, www.lb.undp.org , accessed November 11, 2017

² A city in the Kingdom of Saudi Arabia

without a president between 2014 and 2016. Even after the election of General Michel Aoun as president in October 2016, and despite the formation of a new government cabinet headed by late prime minister Rafic Hariri's son, Saad Hariri, in December 2016, the political situation in Lebanon continued to be in turmoil due to the ongoing Syrian conflict and its impact over the entire region.

On the social front, in 2017, Lebanon had a population of circa 6.2 Million with a growth rate of 1% (no official census being carried out in Lebanon since 1932). The population included 95% Arabs, 4% Armenians and 1% other ethnic groups speaking mainly four languages: Arabic (official), French, English and Armenian. This figure excluded tourists and refugees, the inflow of whom had been considerable since the onset of the Syrian crisis. About 45% of the population was in the 25-54 years age group and the majority of the people lived on or near the Mediterranean coast on the west side of the country, mostly in the capital, Beirut, and its suburbs, while the eastern side of the country behind the mountain ranges was mostly populated by an agricultural population residing the Bekaa valley. Around 94% of the population was literate, and education expenditures represented around 2.6% of the country's Gross Domestic Product (GDP).

Economically, in 2017, Lebanon had a free-market economy with no governmental restrictions on foreign investment. The economy was mostly service-oriented with tourism and banking forming the main sectors, and real estate also representing a major sector contributing to GDP especially after the 2006 war and the subsequent reconstruction. However, the economy suffered from several issues including but not limited to outdated legislation, high taxes and tariffs, weak intellectual property rights, and corruption, among others. The economy also had a huge debt

burden, which had mainly accumulated as a result of the spending on reforms following the civil war of 1975-1990, and which put the country at the third highest in the world in terms of its debt-to-GDP ratio.

The country's GDP in 2017 was quite low at circa USD 50 Billion distributed into the services, industry, and agriculture sectors as represented in **Appendix 1**. Moreover, due to the spillover of Syrian refugees since 2011, the GDP growth rate, previously averaged at 8%, had decreased to the 1-2% range in 2011. This was further worsened by the fact that the majority of the government's spending went into servicing its debt, paying the salaries of government workers, and transferring to the electricity sector, which left a limited spending capability on infrastructure improvements such as electricity, water, and transportation.

On the credit rating front, Lebanon was rated in 2016 as highly speculative by Moody's, Fitch, and S&P, with the former giving a negative rating, while the latter two giving a stable rating³.

E. The Aluminum Industry Worldwide

Aluminum is a strong, lightweight, easily worked and formed, and corrosion resistant material, which can be repeatedly recycled, thus ensuring environmental sustainability, in addition to being highly suited to the increasingly mobile and technologically sophisticated world. Primary aluminum is extracted by electrolysis from

³ Prepared using data from "Rating: Lebanon Credit Rating", <https://countryeconomy.com/ratings/lebanon>, accessed on November 19, 2017

aluminum oxide or alumina, which is a white powder obtained by purifying aluminum ore called bauxite.

Over the past four decades, aluminum production trends have shifted considerably as revealed in **Appendix 2** and **Appendix 3**. While almost 60% of the share of primary aluminum production had been by the United States, USSR, and Japan in 1972, four decades later, the production of primary aluminum was mainly in China, Russia, Canada, and the Middle East with the shift mainly caused by the cost of energy in different parts of the world.

Aluminum is used in several industries including transportation, engineering, building and construction, and packaging. Despite the increasing importance of aluminum in the transportation industry, it continues to be highly valued in the building and construction industry, where it has been mainly used with glazing for roofing, facades, curtain walls, and windows and doors, with an average life span of 50 years or more. Moreover, with the increasing emphasis on sustainable measures, aluminum products have become more mainstream in the building and construction industry⁴.

In 2015, the global door and window market was estimated at USD 82 Billion and was projected to reach USD 137 Billion in 2024 with a Compound Annual Growth Rate (CAGR) of 5.6% over 8 years⁵. In contrast, the global aluminum door and

⁴ The Aluminum Association, “Aluminum Industry Vision: Sustainable Solutions”, November 2001.
https://www.energy.gov/sites/prod/files/2013/11/f4/alum_vision.pdf accessed November 11, 2017.

⁵ Dhananjay Punekar, “Global window and door market size to surpass USD 137 billion by 2024: Asia Pacific to lead the regional landscape”, GlassonWeb,

window market in 2016 was expected to grow to USD 72.1 Billion in 2021 with a CAGR of 5.1% over 5 years mainly as a result of the expected growth of the residential and commercial construction industry⁶.

F. The Aluminum & Glazing Construction Industry Sector in Lebanon

1. Construction Industry⁷

The aluminum & glazing sector in Lebanon had always been an important contributor to the building and construction (real estate) industry, which in turn had always been a major contributor to GDP (around 15% of GDP).

Over the past 7 years, the real estate market in Lebanon witnessed a slow activity due to the uncertain political and economic situation in the region leading to decreasing domestic and foreign demand for real estate. In numbers, the volume of real estate transactions experienced a drop from 82,984 to 64,248 transactions despite the overall value of these transactions remaining fairly stable from USD 8.8 Billion in 2011 to USD 8.4 Billion in 2016. On the supply side, mainly revealed by the construction permits issued for upcoming construction, the drop was from 16,645 thousand square meters of permitted construction in 2011 to 12,200 thousand square meters in 2016.

February 7, 2017. www.glassonweb.com/news/global-window-and-door-market-size-surpass-usd-137-billion-2024-asia-pacific-lead-regional , accessed November 11, 2017

⁶ “Growth Opportunities in the Global Aluminum Door and Window Market”, <https://manufacturingmarket.report/manufacturing-category/doors-and-windows> accessed November 11, 2017.

⁷ FRANSABANK, “Lebanon’s Real Estate Sector: Current Status and Future Trend”, March 2017. <https://www.fransabank.com/English/MediaCenter/PressReleases/Documents/Lebanon%20Real%20Estate%20Sector%20Study%20March%202017.pdf>

This slow activity in the construction industry, mainly due to the prevailing socio-economic and political conditions in Lebanon, had its impact on all the sectors of the industry including the aluminum and glazing sector, and it was foreseen that, in the short term, the real estate market would continue to be slow waiting for a positive shock to be instigated by political stability and economic recovery.

2. The Aluminum & Glazing Industry Value Chain and Major Players⁸

The aluminum and glazing value chain comprised raw glazing producers, importers/suppliers of accessories, aluminum extrusion companies, glass manufacturers and processors, in addition to contractors who were in fact assemblers and installers with engineering input needed for mega projects. These different players imported raw materials, extracted aluminum profiles, manufactured and cut-to-size glass panels of different specifications, and assembled doors, windows, and other building parts for installation on construction projects. **Appendix 4** depicts a high level view of this value chain.

The major extrusion companies operated either in Lebanon or in the region with the national companies providing better quality products albeit at slightly higher prices. Accessories, on the other hand, were mainly supplied from Europe or China. None of the glass manufacturers who produced raw glass was located in Lebanon, however, glass manufacturers who cut glazing panels to size, in addition to processing

⁸ Based on my own experience within the construction industry and information provided by the Company.

these panels into tempered ⁹ and/or double-glazed ¹⁰panels, existed in Lebanon and supplied aluminum and glazing contractors with the glazing panels to be used in assembling the windows, doors and façade or roof elements that the latter installed on construction projects. Very few of the aluminum and glazing contractors processed glazing panels for tempering or double glazing in-house¹¹.

Entering the aluminum and glazing contracting industry required a high upfront capital investment and a very intricate cash flow control, especially when targeting mega or big construction projects, given the payment terms applied in construction projects. To be awarded projects, contractors were required to exhibit financial health by providing bank guarantees ensuring their financial position, and they were usually paid with a long lead time often reaching or exceeding 60 days from the date of completing the works or a part thereof. The returns, however, were quite high with profits reaching the 25% margin for mega projects requiring extensive material procurement and engineering. In some instances, margins were even higher as a result of material sourcing, since products are sometimes difficult to differentiate as being produced by the original manufacturer or not, so some contractors got products from alternative manufacturers at lower prices, which highly magnified their profit margins.

The aluminum and glazing contracting segment in Lebanon was dominated by a few major players including **Glassline Industries**, **Alusteel** and **Alumco**, who

⁹ Processing glass by thermal and chemical treatments to increase its strength and cause it to crumble into small granular pieces rather than shards when broken for safety.

¹⁰ Pressing glazing panels together for acoustic and temperature insulation.

¹¹ Based on information provided by the Company.

controlled the majority of mega projects in the country and the region on a design-build basis. **Algeco**, **Bifem Paralu**, **Hmeidany**, and **Profico** were more involved in medium-sized projects. **Appendix 5** presents the market share breakdown of the aluminum and glazing contracting sector in Lebanon.

Entering the aluminum extraction or glass manufacturing segments was also capital intensive due to the high upfront capital required to purchase the equipment necessary for the processes involved. This segment of the industry, however, was less challenging in terms of cash flow management as it was more of a trading and supply activity with a much shorter lead time for payment as of the date of delivery.

SIDEM was the major aluminum extractor in the country, while **TempoGlass** was one of the major players for glass manufacturing which supplied processed glass panels to the majority of the contracting companies.

G. PROFICO

1. History and Developments to Date

Profico Trading and Contracting Company W.L.L. (Profico) was established in 1988 by Henry Hajj, an electrical engineer with a few years of working experience, and John Khoury, a technician with vast experience in the aluminum industry. The two partnered and established together a small contracting company operating in Choueifat in the southern suburbs of the Lebanese capital Beirut, and managed to be awarded aluminum doors and windows contracting jobs for small residential projects.

After nine years of successful operations, however, one of the major clients of the company went bankrupt in 1997, which prompted John Khoury to step out of the company and left H. Hajj in a difficult situation. However, H. Hajj refused to give up

and slowly caught back momentum leading the company to its golden decade between 2004 and 2014, during which time the company developed on the technical front, got larger in size reaching to around 50 employees, attracted higher revenues, and expanded the operations to carry out aluminum and glazing contracting projects in Lebanon, Congo and Qatar. A major part of the jobs carried out by Profico in Lebanon during this period were for educational institutions and residential projects as part of the reconstruction of the southern suburbs of Beirut that were destroyed following the war of July 2006.

With the intensification of the Syrian crisis and its impact being felt on the real estate industry in Lebanon as of 2014, however, Profico as many other companies operating in the construction industry in Lebanon, felt a significant downturn that led to a decrease in the number of projects awarded. This greatly reduced revenues which were also impacted by late payments and, in certain situations, by payment defaults by some clients and developers. Moreover, the company saw a considerable number of its employees leaving the company to bigger competitor companies due to their fear of the prospect of losing their jobs as awarded projects got less and less in number and construction value. **Appendix 6** reveals the timeline of important historical events for Profico.

2. Corporate Organization, Operations, and Personnel

The company of 15 employees in the beginning of 2017 was managed by key personnel who took care of the administrative and technical aspects of the business. H. Hajj was the general manager and the main decision maker for all business matters ever since taking sole ownership of the company, while Alex, the administrative assistant,

was his father's associate entrusted with updating the company's administrative practices.

The company's operations were split into administrative and technical and were organized as per the organization chart displayed under **Appendix 7**, however the company lacked a clear and well devised career path and compensation plan for its employees.

On the administrative front, accounting and financial reporting were done by an accountant under the direct supervision of Alex and H. Hajj, as was the case in most Lebanese family businesses run and micromanaged by the family general manager.

On the technical front, the company operated in teams, either inside the factory in assembling, or outside the factory in installation on construction sites. Both technical teams were headed by a technical manager directly reporting to the general manager.

The technical manager oversaw all assembling and quality control matters inside the factory where 6 employees carried out the different assembling activities as assigned by the technical manager.

Installation and execution jobs, on the other hand, were carried out by 2 construction teams each headed by a construction manager and both reporting to the technical manager, who was responsible for quality control on construction sites. The construction team leaders were also given the responsibility of following up with clients and took care of sales activities for repeat clients, a few important ones of which were lost as of 2014 with the decline of the inflow of new projects and the departure of some key personnel from the company. **Appendix 8** reveals the assembly and installation processes carried out by Profico.

As of 2017, sales and business development were exclusively done by H. Hajj and A. Hajj, who however were getting heavily burdened with the increasing workload, and as a result hired a new sales representative who would directly report to them.

3. Cost Structure and Financial Position

On the financial front, Profico priced its projects on a cost-plus basis, whereby it tried to maintain a constant profit margin of ten percent. However, with ever decreasing revenues in the past four years as shown in **Appendixes 9, 10, and 11** for selected financial data, profit has been decreasing by the year.

Moreover, the company had a debt to equity ratio of 1:3 and that needed to be taken into account in any future investment decisions taken by the company.

H. Current Situation and Future Prospects

June 30, 2017 was the date on which H. Hajj and A. Hajj needed to finalize the decision to purchase a production line for double glazing panels in their factory that could allow the company to backward integrate in the value chain by entering into the manufacturing side.

The offer was financially attractive as it involved a second-hand but high-capacity production line at one-quarter of the market price of a brand new production line of a lower capacity. Moreover, it would provide the firm with the possibility of supplying double glazed panels to their competitors in contracting, who did not own such a production line, thus minimizing risk and diversifying the sources of income which would improve the overall cash flow and payables status of the company, if managed properly.

However, H. Hajj and A. Hajj were very cautious about how to move forward with this option and how much to rely on manufacturing as opposed to their core business of contracting. Moreover, given the company's prevailing financial situation, they needed to decide on how to finance such an investment in the midst of enduring slow movements in the construction industry and the country in general. They were unsure about the prospects of the company being able to generate enough cash flow to finance growth in the near future. They were also unsure on how to best manage their internal affairs to retain their key personnel and key clients in the absence of a constant stream of new projects.

I. Teaching the Case

A teaching note was prepared as an aid to instructors in the classroom use of the case "Profico: The Way Forward", however, in order not to prejudice the future use of this case, and also in order not to infringe the copyrights of the teaching note should it be published at any time in the future, only the synopsis of the teaching note has been included as part of this project. The full version of the teaching note can be made available, upon request, to the reviewers of this project only, but it may not be transmitted, photocopied, digitized, or otherwise reproduced in any form or by any means without the permission of the copyright holder if the case and its teaching note are published.

1. Teaching Note Synopsis

Profico, an aluminum and glazing contracting company established in Lebanon in 1988, assembles and installs aluminum and glazing doors and windows as well as

aluminum composite panels for local construction projects in Lebanon. The company has seen an increasing growth of revenues over the years, but revenues have started decreasing in the past four years as a result of the regional political turmoil that greatly impacted the construction industry in the country. This has also been paralleled with some of the human resources of the company leaving for other competitors of bigger size for better chances of job security in the midst of the recession.

The management team headed by the General Manager, Henry Hajj, and his son, Alex Hajj, who acts as the administrative assistant, is contemplating integrating backward and expanding the company's scope into manufacturing by investing in a production line for double glazing in their factory that would be used to supply glazing panels to their in-house contracting team and to other contracting competitors as well. This case examines the macroeconomic environment of Lebanon, the aluminum industry worldwide, the aluminum and glazing sector of the construction industry in Lebanon, and the history, corporate organization, and financials of Profico. It mainly requires a strategic decision on an investment opportunity and an innovative plan on how to implement it in a way that would ensure a sustainable reversal of the decreasing trend of revenues in the prevailing political and economic conditions.

CHAPTER V

CONCLUSION AND MANAGERIAL IMPLICATIONS

The general topic of this project is organizational innovation, which is of broad interest in the business world of today, especially with the current economic situation and political turmoil, whereby firms need to think about the bigger picture, despite being caught up in day-to-day operations, to come up with new ideas that improve their performance and enhance their profitability in the midst of intense competition and unclear external factors and macro-environment implications. The project has a special contextual focus on family firms and small to medium sized enterprises, which constitute the biggest share of businesses in the world, in general, and in Lebanon and the region, in particular.

The project starts off from the multi-dimensional framework of organizational innovation covering determinants and forms of innovation prepared by Crossan and Apaydin (2010), and further develops and extends the framework using highly influential and highly cited literature published during the previous decade by adopting a systematic literature review methodology.

Based on the 38 papers selected using an “eyeballing” data analysis and selection technique applied to the abstracts of the 579 papers shortlisted using the systematic literature review methodology and search algorithm, this project tackles the eight headings of general theory, organizational capabilities, knowledge sourcing/management, product innovation, business model innovation, organizational ambidexterity, innovation in family firms, and innovation in SMEs.

Under the **general theory** headline the literature review provides new insights to the concepts of innovation in the areas of management innovation, innovation value chain, technological capabilities, open innovation, and co-innovation. Papers classified under the **organizational capabilities** topic, which is considered one of the determinants of innovation, contribute to new developments pertaining to the measures and yardsticks for dynamic capabilities, as well as to the contextual relationship between firm dynamic capabilities and industry dynamism levels. Under the last headline in this project within the realm of innovation determinants, i.e. **knowledge sourcing/management**, recent literature covers the relationship between the breadth of knowledge search and resulting innovation success, and sheds light onto the strategic use of social networks and models for leveraging external innovation sources.

The recent literature on the topic of **product innovation** reveals that it is viewed as a crucial form of innovation to seek after during times of economic distress apart from underlining the importance that should be given to customer habits and their role in shaping new products. The headline covering the other form of innovation, **business model innovation**, incorporates literature that contributes to new developments related to the classification of BMI and the identification of its moderators and circumstances necessitating it, while highlighting the importance of the link between BMI and business strategy, innovation management, and economic logic to ensure successful outcomes. This prepares the grounds to the last headline pertaining to innovation outcomes, namely **organizational ambidexterity**, which reveals based on the recent publications that management frameworks are needed to tackle the tension between exploration and exploitation, noting that this tension and ability to orchestrate

between the two are at the core of ambidexterity, which is primarily considered a leadership role and outcome.

Tackling the topic of ambidexterity and the ability to orchestrate resources within the context of **family firms**, recent literature confirms that family involvement has a negative effect on innovation investment and inputs, but a rather positive association with the conversion of inputs to outputs.

Publications covering innovation within the context of **SMEs**, on the other hand, underline the resource constraints and the “liability of smallness” faced by these SMEs, and hypothesize that in today’s world it is crucial for SMEs to move towards open innovation which is proven to have a positive association with firm performance.

As a result of the literature review and the above conclusions, this project enhances and extends Crossan and Apaydin’s framework (2010) by presenting three alternative frameworks for innovation determinants proposed by each of Tellis, Prabhu, and Chandy (2009), Slater, Mohr, and Sengupta (2014), and Foss and Saebi (2017), apart from adding the contexts of family firms and SMEs when considering organizational innovation.

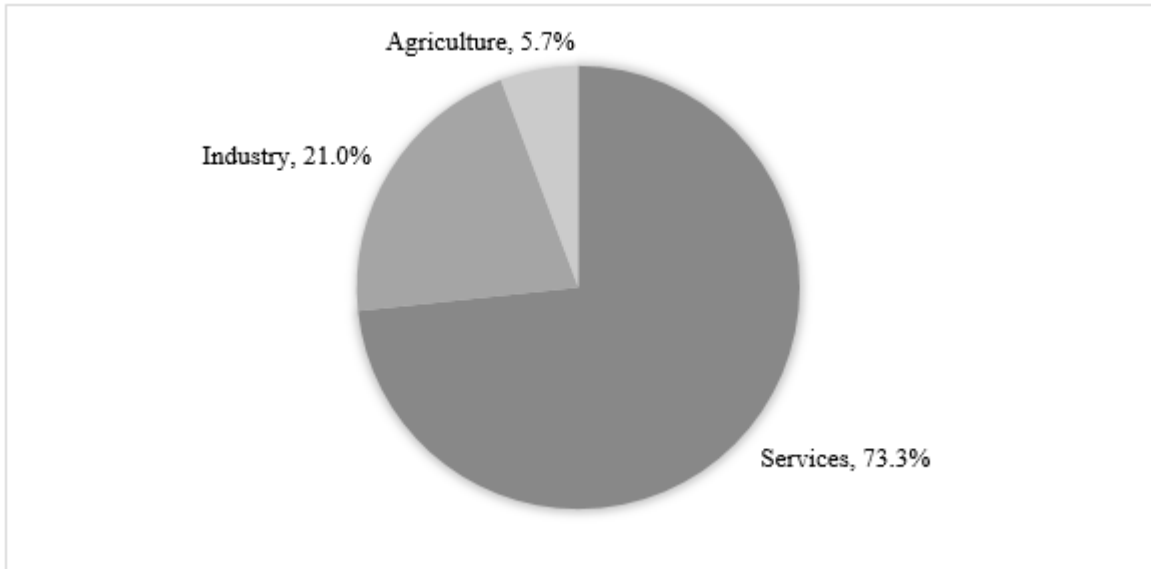
The project also provides a real-life implementation of the topic of organizational innovation by presenting a case (teaching note available only to instructors upon the permission of the author or the copyright holder of the case if published at any point in the future) about a small sized Lebanese family contracting firm which is handed an opportunity to innovate by integrating backwards to exploit an external source of innovation, and add a new product offering which is outside the core business of their firm. The aim of the case, which is intended for teaching purposes in a strategy or innovation course classroom, is to move from theory to practice and identify

actions and best-practices that successful companies can adopt to overcome barriers impeding innovation, and to leverage, exploit and explore available opportunities for innovation and growth even in the midst of economic downturns and political turmoil.

Through the business case and backed up by the systematic literature review findings, the project sheds light on the role of a family organization's leadership in adopting and directing change and novelty to enhance the thrust and lead to an improved performance resulting in growth and enhanced profitability.

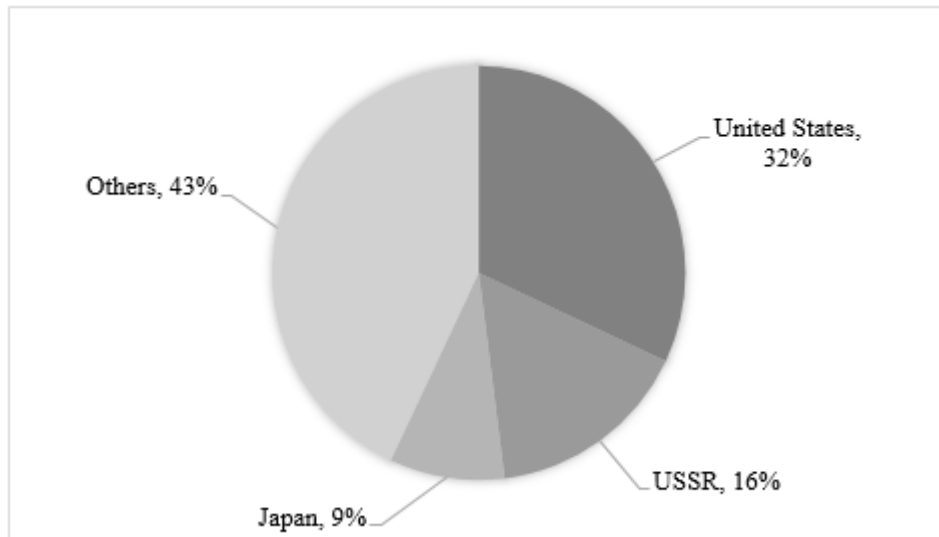
APPENDIX 1: CONTRIBUTION TO GDP IN LEBANON BY
SECTORS¹²

TOTAL: 50 BILLION USD



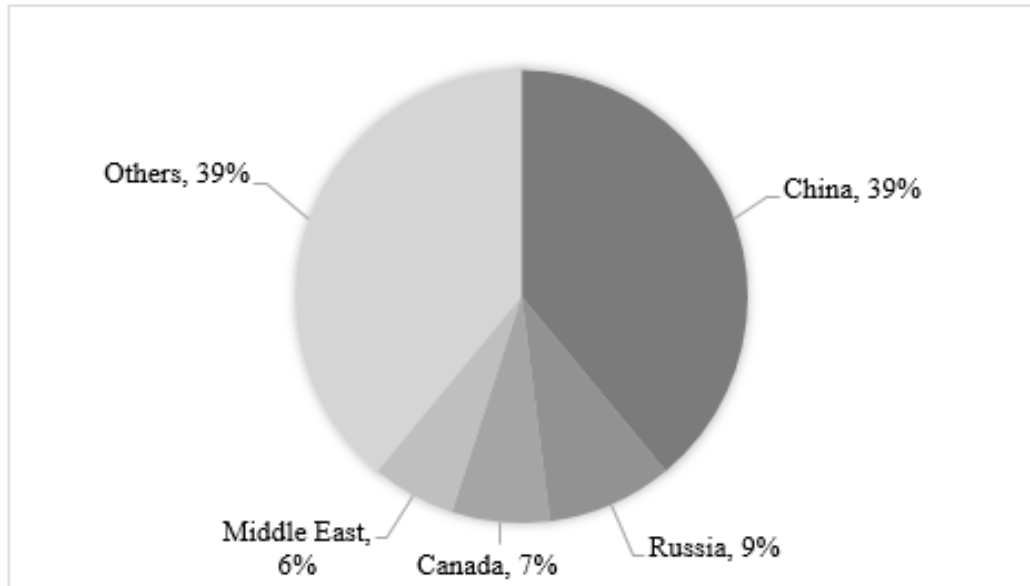
¹² Source: Prepared by the authors based on CIA World Fact book data, 2017, https://www.cia.gov/library/publications/the-world-factbook/geos/print_le.html

APPENDIX 2: MAIN PRODUCERS OF PRIMARY
ALUMINUM IN 1972¹³



¹³ Source: Prepared by the authors based on The Aluminum Association, “Aluminum Industry Vision: Sustainable Solutions”, November 2001, https://www.energy.gov/sites/prod/files/2013/11/f4/alum_vision.pdf

APPENDIX 3: MAIN PRODUCERS OF PRIMARY
ALUMINUM IN 2010¹⁴

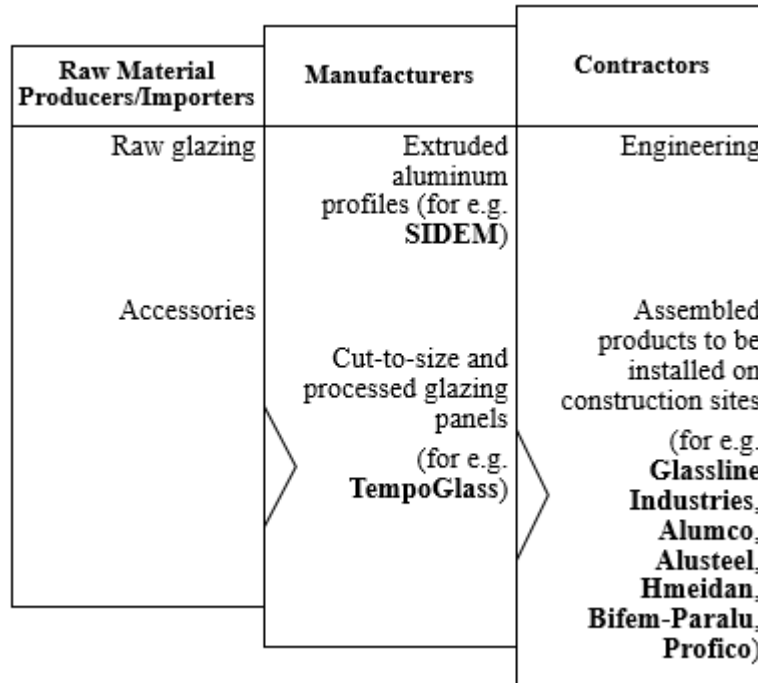


The

¹⁴ Source: Adapted from The Aluminum Association, “Aluminum Industry Vision: Sustainable Solutions”, November 2001, https://www.energy.gov/sites/prod/files/2013/11/f4/alum_vision.pdf

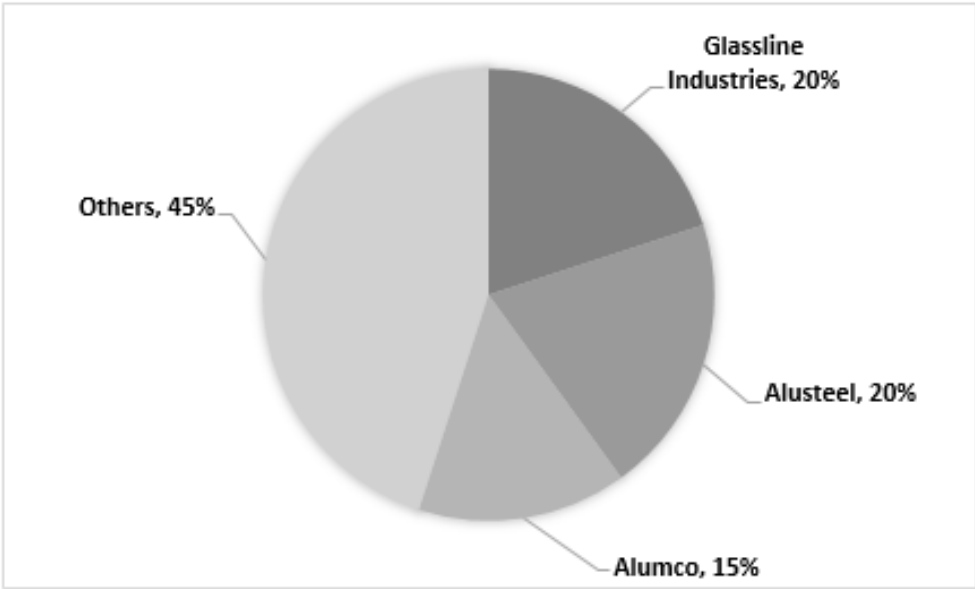
APPENDIX 4: ALUMINUM AND GLAZING SECTOR

VALUE CHAIN IN LEBANON ¹⁵



¹⁵ Source: Prepared by the authors based on information from the Company

APPENDIX 5: MARKET SHARE BREAKDOWN OF
ALUMINUM AND GLAZING CONTRACTORS IN
LEBANON ¹⁶



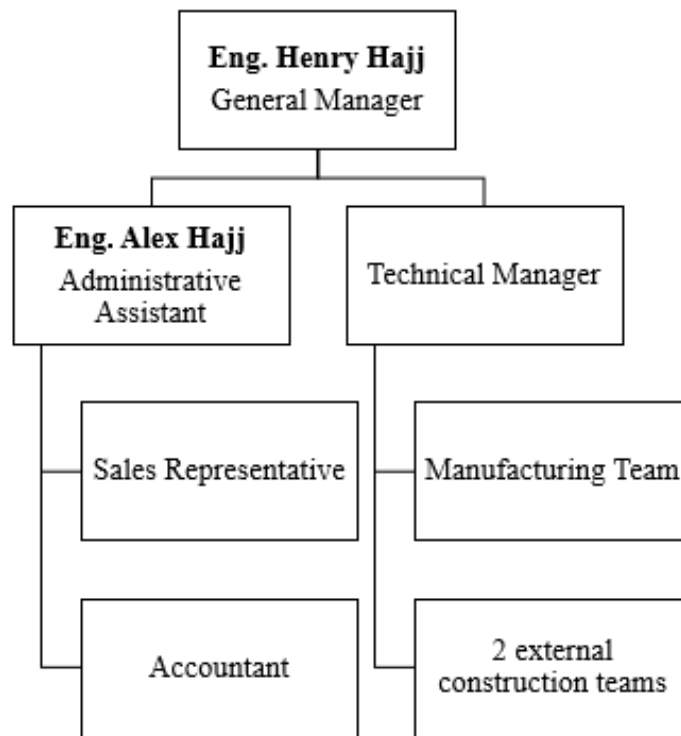
¹⁶ Source: Prepared by the authors based on information from the Company

APPENDIX 6: TIMELINE OF SELECTED MAIN EVENTS FOR PROFICO¹⁷

1988	Profico established in Lebanon.
1997	Profico faces financial difficulty due to the bankruptcy of one of the main clients and the stepping out of one of the two partners.
2004	Start of Profico re-invigoration period.
2006	33-day war by Israel on Lebanon.
2011	Start of conflicts in Syria.
2014	Intensification of the Syrian conflict.
2013-2017	Period of decrease in revenues and reduction in growth rate due to the impact of the Syrian conflict on the construction industry in Lebanon

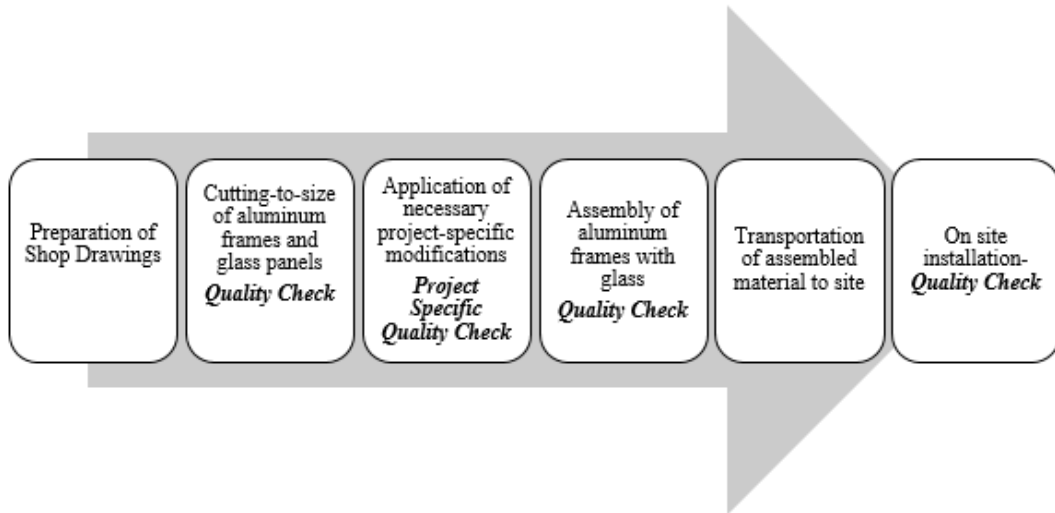
¹⁷ Source: Company records

APPENDIX 7: PROFICO ORGANIZATION CHART¹⁸



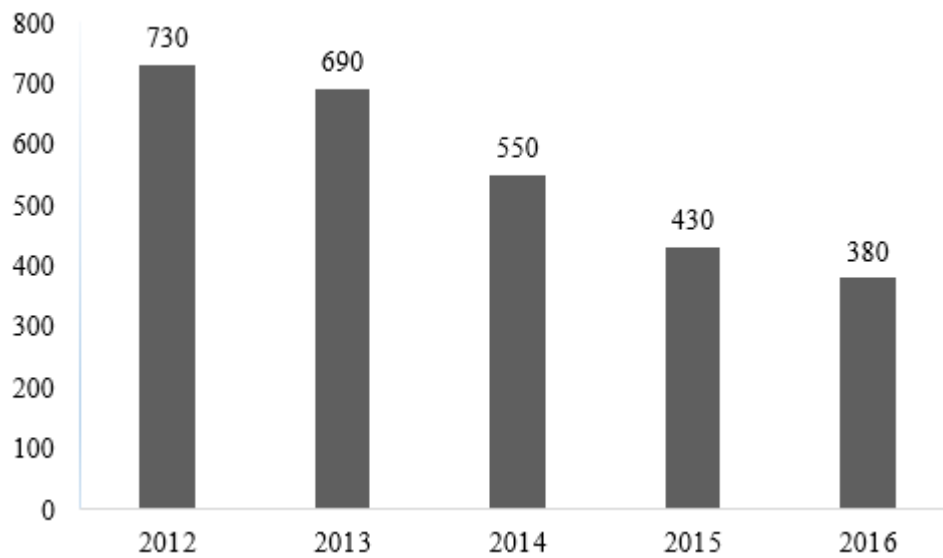
¹⁸ Source: Company records

APPENDIX 8: PROFICO MANUFACTURING AND INSTALLATION PROCESS¹⁹



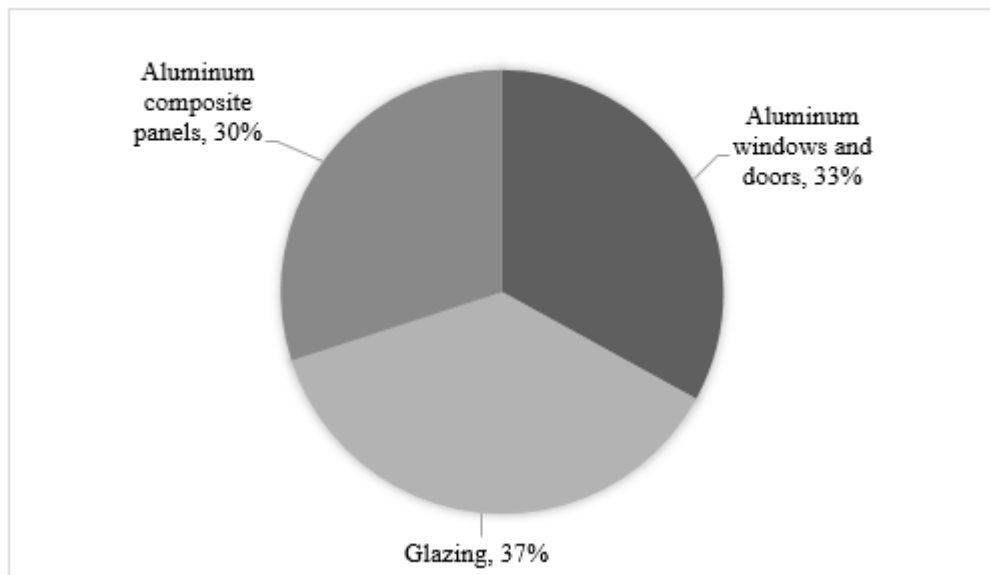
¹⁹ Source: Company records

APPENDIX 9: PROFICO REVENUES OVER FIVE YEARS IN
THOUSANDS OF US DOLLARS²⁰



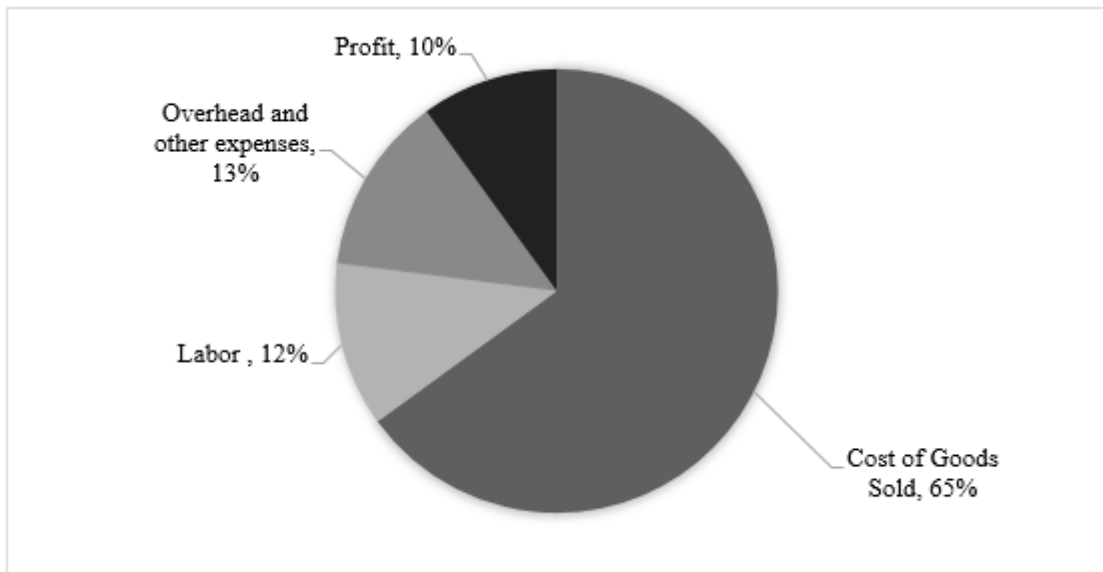
²⁰ Source: Company records (The data in this chart have been disguised in order to protect the confidentiality of information)

APPENDIX 10: PROFICO SOURCES OF REVENUES²¹



²¹ Source: Company records

APPENDIX 11: PROFICO REVENUE BREAKDOWN²²



²² Source: Prepared by the authors based on the company records

BIBLIOGRAPHY

- Amit, R., & Zott, C. (2012). Creating value through business model innovation. *MIT Sloan Management Review*, 53(3), 41.
- Andriopoulos, C., & Lewis, M. W. (2009). Exploitation-exploration tensions and organizational ambidexterity: Managing paradoxes of innovation. *Organization Science*, 20(4), 696-717.
- Apaydin, M., Jones, R., George, J., & Belkhdja, O. (2017). Contemporary Management. *McGraw-Hall Education*, 168-172.
- Birkinshaw, J., Hamel, G., & Mol, M. J. (2008). Management innovation. *Academy of management Review*, 33(4), 825-845.
- Brunswick, S., & Vanhaverbeke, W. (2015). Open innovation in small and medium-sized enterprises (SMEs): External knowledge sourcing strategies and internal organizational facilitators. *Journal of Small Business Management*, 53(4), 1241-1263.
- Camisón, C., & Villar-López, A. (2014). Organizational innovation as an enabler of technological innovation capabilities and firm performance. *Journal of business research*, 67(1), 2891-2902.
- Chesbrough, H. (2010). Business model innovation: opportunities and barriers. *Long range planning*, 43(2-3), 354-363.
- Chesbrough H. and Rosenbloom R. S. (2002). The role of the business model in capturing value from innovation: evidence from xerox corporation's technology spin-off companies. *Industrial and Corporate Change* 11(3), 529.
- Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of management studies*, 47(6), 1154-1191.
- Dahlander, L., & Gann, D. M. (2010). How open is innovation?. *Research policy*, 39(6), 699-709.
- Davies, A., & Brady, T. (2016). Explicating the dynamics of project capabilities. *International Journal of Project Management*, 34(2), 314-327.
- De Massis, A., Frattini, F., & Lichtenthaler, U. (2013). Research on technological innovation in family firms: Present debates and future directions. *Family Business Review*, 26(1), 10-31.
- Duran, P., Kammerlander, N., Van Essen, M., & Zellweger, T. (2016). Doing more with less: Innovation input and output in family firms. *Academy of Management Journal*, 59(4), 1224-1264.

Foss, N. J., & Saebi, T. (2017). Fifteen years of research on business model innovation: how far have we come, and where should we go?. *Journal of Management*, 43(1), 200-227.

Gupta, H., & Barua, M. K. (2016). Identifying enablers of technological innovation for Indian MSMEs using best–worst multi criteria decision making method. *Technological Forecasting and Social Change*, 107, 69-79.

Huizingh, E. K. (2011). Open innovation: State of the art and future perspectives. *Technovation*, 31(1), 2-9.

Inventis (2014). Lebanon SME Strategy.

<http://www.economy.gov.lb/media/10311/launching-of-the-sme-strategy-december-16-2014.pdf>

Johnson, M. W., Christensen, C. M., & Kagermann, H. (2008). Reinventing your business model. *Harvard business review*, 86(12), 57-68.

Labrecque, J. S., Wood, W., Neal, D. T., & Harrington, N. (2017). Habit slips: When consumers unintentionally resist new products. *Journal of the Academy of Marketing Science*, 45(1), 119-133.

Laursen, K., & Salter, A. J. (2014). The paradox of openness: Appropriability, external search and collaboration. *Research Policy*, 43(5), 867-878.

Lee, S. M., Olson, D. L., & Trimi, S. (2012). Co-innovation: convergenomics, collaboration, and co-creation for organizational values. *Management Decision*, 50(5), 817-831.

Leiponen, A., & Helfat, C. E. (2010). Innovation objectives, knowledge sources, and the benefits of breadth. *Strategic Management Journal*, 31(2), 224-236.

Nieto, M. J., Santamaria, L., & Fernandez, Z. (2015). Understanding the innovation behavior of family firms. *Journal of Small Business Management*, 53(2), 382-399.

Nonaka, I., & Von Krogh, G. (2009). Perspective—Tacit knowledge and knowledge conversion: Controversy and advancement in organizational knowledge creation theory. *Organization science*, 20(3), 635-652.

O'Reilly III, C. A., & Tushman, M. L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in organizational behavior*, 28, 185-206.

Palacios-Marqués, D., Merigó, J. M., & Soto-Acosta, P. (2015). Online social networks as an enabler of innovation in organizations. *Management Decision*, 53(9), 1906-1920.

- Parida, V., Westerberg, M., & Frishammar, J. (2012). Inbound open innovation activities in high-tech SMEs: the impact on innovation performance. *Journal of small business management*, 50(2), 283-309.
- Porter, M. E., & Kramer, M. R. (2011). Creating shared value: Redefining capitalism and the role of the corporation in society. *Harvard Business Review*, 89(1/2), 62-77.
- Raisch, S., & Birkinshaw, J. (2008). Organizational ambidexterity: Antecedents, outcomes, and moderators. *Journal of management*, 34(3), 375-409.
- Raisch, S., Birkinshaw, J., Probst, G., & Tushman, M. L. (2009). Organizational ambidexterity: Balancing exploitation and exploration for sustained performance. *Organization science*, 20(4), 685-695.
- Roper, S., Du, J., & Love, J. H. (2008). Modelling the innovation value chain. *Research policy*, 37(6-7), 961-977.
- Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of business Venturing*, 26(4), 441-457.
- Schilke, O. (2014). On the contingent value of dynamic capabilities for competitive advantage: The nonlinear moderating effect of environmental dynamism. *Strategic management journal*, 35(2), 179-203.
- Slater, S. F., Mohr, J. J., & Sengupta, S. (2014). Radical product innovation capability: Literature review, synthesis, and illustrative research propositions. *Journal of Product Innovation Management*, 31(3), 552-566.
- Teece, D. J. (2010). Business models, business strategy and innovation. *Long range planning*, 43(2-3), 172-194.
- Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic management journal*, 28(13), 1319-1350.
- Tellis, G. J., Prabhu, J. C., & Chandy, R. K. (2009). Radical innovation across nations: The preeminence of corporate culture. *Journal of marketing*, 73(1), 3-23.
- Tranfield, D., Denyer, D. and Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14, 207-22.
- Van de Vrande, V., De Jong, J. P., Vanhaverbeke, W., & De Rochemont, M. (2009). Open innovation in SMEs: Trends, motives and management challenges. *Technovation*, 29(6-7), 423-437.

Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International journal of management reviews*, 9(1), 31-51.

West, J., & Bogers, M. (2014). Leveraging external sources of innovation: a review of research on open innovation. *Journal of Product Innovation Management*, 31(4), 814-831.

Zhou, K. Z., & Wu, F. (2010). Technological capability, strategic flexibility, and product innovation. *Strategic Management Journal*, 31(5), 547-561.

Zook, C., & Allen, J. (2003). Growth outside the Core. *Harvard Business Review*.

