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I&E Minor Thesis

## Comparison of Spinoffs vs StartUps in innovation capabilities

Study of factors affecting innovation methods  
of spinoffs and startups

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## **Abstract**

In recent years, our lives have been drastically improved by revolutionary technologies and innovations. This has been made possible by visions of entrepreneurs and leaders working in businesses like spin-offs and start-ups. Both spin-offs and start-ups have been widely adopted in entrepreneurial world and have been proven to be highly successful in terms of competitiveness, innovativeness, growth, and economical development. However, there is still a gap in understanding the major differences in innovation capabilities of spin-offs and start-ups. This research is focused on finding the major factors which affect the innovation performance of start-ups and spin-offs. Literary theories i.e. resource-based theory, human capital theory, social capital theory and motivational theory had been used to find such factors and developed hypotheses which were tested using literature reviews and qualitative exploratory questionnaires. This study will help weave the path for future theoretical and experimental research on comparing start-ups with spin-offs regarding innovation developments and help business owners to plan their innovative strategies efficiently.

*Keywords:* Startup, Spin-offs, Innovation Capabilities, Innovation Performance, Resource-based Theory, Human Capital Theory, Social Capital Theory, Motivational Theory



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# 1 Introduction

In this world of technological and innovation development, we have seen a continuous evolution in types of businesses. Though the objective of each type of firm is same i.e. to generate revenue by creating value for customers, there are differences in their approach to innovate and maintain sustainability. Two types of businesses which have been the focus of attention to entrepreneurs and researchers for many years are spin-offs and start-ups. Both businesses have contributed to improve nations economies and employment rates. However, there are differences in their innovation capabilities and their establishment processes.

## 1.1 Motivation

In entrepreneurial literature, there have been several studies for understanding the taxonomy and formation of spin-off firms and start-ups. Researchers have been trying to narrow the gap between theoretical understanding of processes adopted by spin-offs and start-ups and their related practical implications. Both businesses have been studied to understand their topologies, reasons of success and failures [2], and their affects on the economical growth[3]. There are also numerous comparative studies between spin-offs and start-ups based on technological development [4], resource inheritance and exploitation [5], and survival and growth rate [6]. However, there has been little research on finding the major factors which affect the innovation processes of start-ups and spin-offs.

## 1.2 Objective

The purpose of this paper is to investigate major factors which affect the innovation methods of spin-offs and start-ups. It has addressed this problem by reviewing existing literature and using exploratory interviews with founders of spin-offs and start-ups. This study will guide the future research in this domain and facilitates business owners to develop strategies for their business success.

## 1.3 Outline

The remainder of this paper is summarized as follows:

In **Section 2**, prior research will be discussed in order to lay foundations of the problem in hand.

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Based on the theoretical discussion, **Section 3** will describe theoretical framework which will help to identify major factors for comparison and derive hypotheses.

In **Section 4**, methodology of collecting data for testing hypotheses will be discussed

**Section 5** will analyze the data and derive meaningful results.

Final **Section ??** concludes the research , discusses its potential benefits and identifies the opportunities for future work.

## 2 Literature Review

This section explains the important definitions and previous research on start-ups and spin-offs to gain better understanding of purpose of this research.

### 2.1 Definitions of Start-Ups

According to **Wikipedia** [7]: “A startup company (startup or start-up) is an entrepreneurial venture which is typically a newly emerged, fast-growing business that aims to meet a marketplace need by developing or offering an innovative product, process or service.”

According to Steve Blank [8]: “A startup is a temporary organization designed to search for a repeatable and scalable business model”.

“A startup is a company working to solve a problem where the solution is not obvious and success is not guaranteed,” says Neil Blumenthal, co-founder and co-CEO of Warby Parker [9].

TechCrunch writer Alex Wilhelm defines startup by “50-100-500” rule as follows: “If your company has, or is any of the following, you have to hang up your Startup Uniform, and realize that you are just another technology company either hunting for or actively avoiding an IPO,” Wilhelm writes. ”\$50 million revenue run rate (forward 12 months); 100 or more employees;Worth more than \$500 million, on paper or otherwise.” [10]

In a nutshell, there exists no single definition of start-up. Having read many definitions and views of people about start-ups, I have come up with my own definition:

**“A start-up is an entrepreneurial venture aimed at creating value for itself and its customers by solving a specific problem and embracing risks and failures on its way to become a stable business. It is the outcome of efforts of individuals who work on their own resources without inheriting any support from other organizations.”**

## 2.2 Definitions of Spin-Offs

According to **Wikipedia**[11]:

“Spin-offs are divisions of companies or organizations that then become independent businesses with assets, employees, intellectual property, technology, or existing products that are taken from the parent company.”

According to **Merriam Webster Dictionary** [12]:

“spin-off is the distribution by a business to its stockholders of particular assets and especially of stock of another company; also: the new company created by such a distribution”

**The Economist Group Limited** published in blog “**The art of the spin-off**” [13]:

“In business, spin-offs are the offspring of established companies. You take a division and turn it into a free-standing firm.”

A number of other studies define a spin-off as a firm whose intellectual capital originates in its parent, for example, a university, research institute, or another companies [14]. The definition of spin-off varies depending upon the type of spin-off we are referring to. Broadly speaking, there are two types of spin-offs i.e. Academic spin-offs and Corporate spin-offs. These two types are further classified by researchers based on resource transfer, parental support and reasons of their creation [15]

## 2.3 Previous Research on Start-Ups

Research on Start-ups have been going on since 1980s. The relationship between innovativeness and success of firms has been the focus of research in literature for many decades. Schumpeter [16] described that innovativeness increased market power of a firm. Porter [17] explained that innovation improved the ability of firms to break competition. Zahra and George [18] had credited innovativeness for enhancing absorptive capacity of a company.

However, a lot of researchers also described negative affects of innovativeness. Samuels-son and Davidsson [19] stated that innovations could lead to introducing risks in success of start-ups. Amason, Shrader and Tompson [20] had declared innovativeness and novelty a great liability in the path of start-ups success . John Freeman and Jerome S. Engel [21] had compared start-ups with corporate companies in their innovation models. According to them, big companies have more capital, scientists and engineers, brand presence, strategic alliances, evolving organizational structures, and well established business processes. On the other hand, young firms are a victim of newness and are at higher risks of failure in the beginning. However, they have also mentioned that big companies can fail in developing innovative products due to immobility in resources and misalignment of incentives. In such scenarios, start-ups could evolve into sustainable,

growing and profitable businesses. Ari Hyytinen , Mika Pajarinen and Petri Rouvinen [22] suggested that a startup’s innovativeness might in fact hurt its survival prospects. Their research has found that survival rate for innovative startups is approximately 67 percentage points lower than that of non- innovators. They also find that the interaction of innovativeness and entrepreneurs’ greater appetite for risk further reduces the prospects for survival.

In view of extensive research on finding affects of innovativeness on start-ups, it seems that innovation might have either a positive or negative affect on start-ups success rate. However, empirical literatures mostly states that results are positive [22].

## 2.4 Previous Research on Spin-Offs

No one can deny the importance of spin-offs in recent economic developments. Forbes calculates that American companies completed more than 80 spin-offs worth at least \$500m each between 2002 and 2012 [13]. There has been research on understanding corporate spin-offs topology [23]. Helmut and Mike [24] studied topology of spin-offs with respect to their environmental contexts as shown in figure 2.1 and defined four types of spin-offs i.e. Academic spin-off, Corporate spin-off, Privatization buyout/buy-in of university research and Management buy-out/buy-in of division.

		Environmental context	
		University context	Commercial context
Firm level – spin-off mode	New firm	QUADRANT 1 Alumni start-up Academic spin-off (pure) Academic spin-off (hybrid)	QUADRANT 2 Corporate spin-off (use of intellectual property/assets) Employee spin-off (no direct use of intellectual property/assets)
	Existing activity	QUADRANT 3 Privatization buyout/buy-in of university research agency/station	QUADRANT 4 Management buyout of division Management buyin of division

Figure 2.1: Topology of spin-offs. Adapted from “The origin of spin-offs: a typology of corporate and academic spin-offs.” by Fryges, Helmut, and Mike Wright. Small Business Economics 43.2 (2014)

Sierdjan Koster did a survey of the founders of new companies and found that existing companies had a positive impact on creation of new businesses and provides a basis for the new company to build on. However, supported companies are less innovative [25].

In 1999, Institute for Prospective Technological Studies (IPTS) delivered a report “The Impact of Corporate Spin-Offs on Competitiveness and Employment in the European Union” in which seven countries were investigated ( United Kingdom, Sweden, Spain, Italy, Germany, France, and Denmark ) based on two types of Corporate Spin-offs

i.e. Restructuring-driven Spin-Off and Entrepreneurial Spin-Offs [26]. The results have shown that Corporate Spin-Off processes represent a valuable mechanism for the transfer of technological and business knowledge and can produce considerable impacts on competitiveness and the socio-economic environments.

Andreas Stephan, in his research [27], compared research-based spin-offs with comparable knowledge-intensive firms created in other ways. He found that out of 121 research spin-offs investigated have more patent applications and more radical product innovations, on average, compared to similar firms. Research has also been done in understanding the taxonomies of research-based spin-offs based on type of resources, the business model and institutional links [28]. Guido Buenstorf [29] has compared characteristics of spin-offs formed on basis of triggering events as necessity and opportunity spin-offs. He described four types of useful knowledge which employees can learn in parent companies i.e. knowledge about technology, markets and customer needs, organizational processes, and personal skills.

## 2.5 Previous Research on Comparison of Spin-Offs with Start-Ups

Peter and Viliam [30] provided a theoretical framework for comparing start-ups and spin-offs in terms of different types of support they need. James and Dennis [31] had done research on different forms of incentives, in form of property rights and sufficient funds, faced by employees and employers which results in creation of either a start-up or a spin-off. Sierdjan Koster [32] has compared start-ups and spin-offs based on resource theory using empirical study of American entrepreneurs and showed that spin-offs are indeed a step ahead of firms that do not receive support from a third party company. He identified four different types of firms based on resource sharing and parental support as shown in figure 2.2.

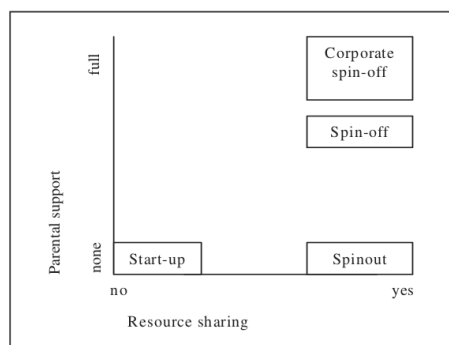


Figure 2.2: Difference between Start-up and spin-off based on resource and parental support. Adapted from “Spin-off firms and individual start-ups. Are they really different?.” by Sierdjan Koster. ERSA conference papers (2004)



## 3 Theoretical Framework

In this section, four major theories, used in entrepreneurial literature, will be discussed. For each of these theories, a hypothesis will be developed in order to conduct research in this paper.

### 3.1 Resource-Based Theory

Success of a firm has always been linked to its valuable and strategic resources which provide capabilities to perform better than its competitors. Jay Barney (1991) [33] described four unique features of a firm's strategic resources to generate sustained competitive advantage. These are greater value, rareness, difficulty to imitate and lack of substitutability. Lewin and Phelan [34] stated that the value of any economic organization (firm, business, company) depends upon resources under its control.

In short, resource-based theory states that performance of a company depends upon the quality and nature of resources managed effectively to increase its production of values and services. Resources can be classified as tangible or intangible. Tangible resources include physical assets like buildings, capital and codified knowledge. Intangible resources include knowledge in form of management and technological skills and routines used for planning and controlling an organization.

Alexander Tubke (2004) [35] has found that spin-offs have higher success rate than any other form of corporate venture. Transfer of resources and knowledge from parent company to spin-off is the main reason for this higher success rate.

Maintaining the connection between spin-off and parent company can have both positive and negative effects on future development of spin-off. On one side, spin-off can take advantage of stable resources of parent company, reducing their risks of financial crisis and lack of support at making important decisions. But on the other hand, continuing the relationship with parent firm causes the spin-off to use the already established procedures and strategies of parent company. This can cause unwillingness in spin-offs to accept to new technologies and methods leading to failure in innovative development.

There has been research that spin-offs with indirect relations to parent company perform better than spin-offs with direct relationships [36]. Ideas can be developed and implemented in company and experimented with new business models and innovations in spin-offs [37]. On the other side, there has also been a research on negative influences of

parental support on spin-offs as its unwillingness to seek for new customers and making investments in new products while having parent company as a secure source of business [38]

Based on the above research, following hypothesis has been developed:

***Hypothesis 1. Transfer of tangible and intangible resources from mother companies to spin-offs enhances their innovation.***

## 3.2 Human Capital Theory

According to Becker [39], if a company invests on its employees for their general and technical training and improves wages, it would lead to higher productivity and success of business. Human capital theory states that a company success depends upon skills, training, experience, education and talents of its employees and its ability to effectively deploy them to create value for its customers. Human capital vary depending upon the type of firms and their targeted markets.

There has been several researches describing the importance of human capital on success of firms. For achieving competitive advantage, the role of human capital is greater than ever before because it is considered to be the wealth success and major source of competitive advantage [40]. Credibility and competence of organizations are indicated by their investment on human capital [41]. Continuous investment in human capital is required for a company to maintain its position in market. Human capital becomes less valuable if it is not updated over time [42]. In view of above arguments, human capital covers a broader scope in terms of its characteristics. In this paper, human capital in form of **previous industry experience, managerial skills and technical knowledge** is considered.

Following hypothesis is developed for comparing innovation capabilities in start-ups and spin-offs based on human capital theory:

***Hypothesis 2. Previous employment experience and managerial skills help spin-offs to innovate better than start-ups***

## 3.3 Social Capital Theory

In book **Social Capital: An International Research Program** [43], social capital is defined as

**“The capital captured in social relations and its production is a process by which surplus value is generated through investment in social relations.”**

Social capital refers to the resources invested in maintaining social relationships to provide benefits to individuals and collective actors. The success or failure of a firm depends upon its networks to other businesses and customers. These relationships are developed by long term investments and trust. It helps businesses to achieve their goals and reach out to the market places which would be impossible without their network connections.

Peter Witt had found a positive relation between the networking activities of founders and their start-ups success [44]. He stated that networking allow entrepreneurs to get resources cheaper than they could be obtained from markets and to secure resources that would not be available on markets at all, e.g. reputation, customer contacts, etc. In a recent study of university incubation support on academic spin offs [45], it had been found that networking support had positive influence on the performance of spin-offs. There has been many studies [46][47] stating that firms exploit more opportunities and increase their development processes by developing strong networking relationships with other firms and customers. According to Yvonne Bernardt (2002) [48], the reputation of the parent firm is a major factor in success of spin-offs. Through the network of parent company, spin-off can get access to customers, suppliers and finance easily.

In view of above studies, following hypothesis is developed:

***Hypothesis 3. Better network capability and collaboration activities of spin-offs improves innovation process.***

### **3.4 Motivational Theory**

Behind every accomplishment, there is a motivation. Motivation is the characteristics that derives us to continue working instead of failures in the path. It is the force that keeps us going on the path with determination to achieve our goals.

According to Maslows theory of motivation [1], we have hierarchy of needs which ranges from lower to higher ends. As lower end needs are fulfilled, we tend to other higher end needs. This hierarchy of needs is implemented in a form of pyramid shown in figure 3.1:

All these needs are source of motivation that keep us pushing towards our goals. Motivation has been broadly classified into two types :extrinsic and intrinsic motivation [49]. Extrinsic motivation occurs when we perform a task in order to receive a reward or to avoid some circumstances. Intrinsic motivation involves performing a task for personal fulfillment and internal satisfaction. No matter which type of motivation is used, every successful business needs it in its employees. If employees are not motivated, all the knowledge, skills and professional networks go useless. The results of a survey of 80 academic entrepreneurs [50] had shown that getting extra university salaries is the strongest motivation for its faculty members followed by research-related benefits, the desire for independence and sense of accomplishment. In addition to this materialistic reward,

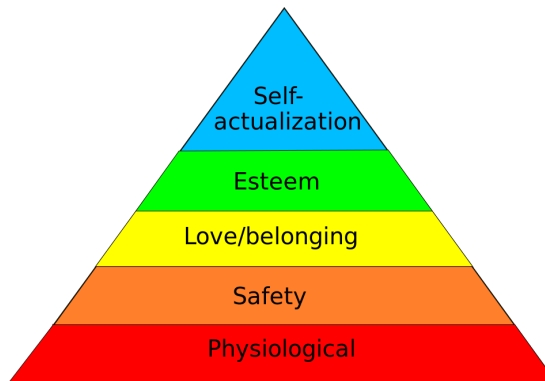


Figure 3.1: Maslow's hierarchy of needs, represented as a pyramid with the more basic needs at the bottom from [1]

career development, solving research problems , and getting professional recognition are also considered to be important motivations.

In literature, entrepreneurial motivations have been divided into two categories i.e. push and pull motivations. Building career, getting professional reputation and status, need for independence, going after adventures of creating innovative ventures and grabbing market opportunities are classified under pull motivations. Push motivations include dissatisfaction in job or pressure to follow the paths adopted by colleagues. If entrepreneurs are pushed to join spin-offs or start-ups against their desires, chances of success of firms decrease significantly. Buenstorf [29] had described several adverse affects which triggered the development of spin-offs including parent company's exit, competitor acquisition and top-level management changes. These triggers fall under the category of pull motivation of employees and affects the spin-offs performance.

In view of above arguments and theories, following hypothesis is developed:

***Hypothesis 4. Lack of motivation in employees who are forced to join spin-off hinders the progress in innovation.***

## 4 Methodology

In this section, methodology used for testing hypotheses is discussed. Both primary and secondary research methods had been used [25]. Primary research was done using exploratory qualitative interviews with help of questionnaires. Secondary research was conducted using qualitative analysis of related literature.

### 4.1 Data Collection

Questionnaire and literature review were used to find the answers of research questions in this paper. Questionnaire was developed using online resource [51]. The complete questionnaire is provided in Appendix A. Respondents to questionnaire were two start-ups and one spin-off.

### 4.2 Characteristics of Respondents of Questionnaire

Some details on the businesses of respondents involved in questionnaire are provided in table 4.1.

All respondents were on the managerial level positions in their companies. Following table 4.2 illustrates some details on the people involved in answering questions.

Data collected for testing each hypothesis is presented in the following sections

### 4.3 Data For Hypothesis 1

Hypothesis 1 states that transfer of resources from parent company to spin-off improves its innovation capabilities. Since start-ups are not developed from a parent company, lack of resources in the initial stage of development affects their innovation capabilities. Questions asked for testing this hypothesis were about affects of transferring resources from parent companies to spin-offs. Figure 4.1 shows the results of primary research conducted for Hypothesis 1.

Conatix CEO, David Lehrer, said the following about the resources they received from parent company:

**“We received free and discounted use of office space from Humboldt University Berlin which was valuable in the beginning, also servers and other old and used equipment from the university”.**

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<b>Name of business</b>	<b>Type of business</b>	<b>Type of work</b>	<b>Location</b>
Imsys [52]	Start-up	Designs and supplies networked control solutions to OEMs in the market of Embedded Control, Telematics, Automation, and the Internet of Things	Stockholm, Sweden
PTX Tech [53]	Start-up	PTX presents 4D MMS automotive solution for connected driving	Berlin, Germany
Conatix [54]	Spin-off	Conatix is reinventing business research, helping companies to do market, investment and strategic research better, faster and cheaper	Berlin, Germany

Table 4.1: Characteristics of respondents businesses

<b>Name of business</b>	<b>Role of Respondent in company</b>	<b>Years of working at current firm</b>
Imsys [52]	Director Business Development	More than five years
PTX Tech [53]	CEO	Less than five years
Conatix [54]	CEO	More than five year

Table 4.2: Characteristics of respondents of questionnaires

Table 4.3 shows the secondary research results used for hypothesis 1.

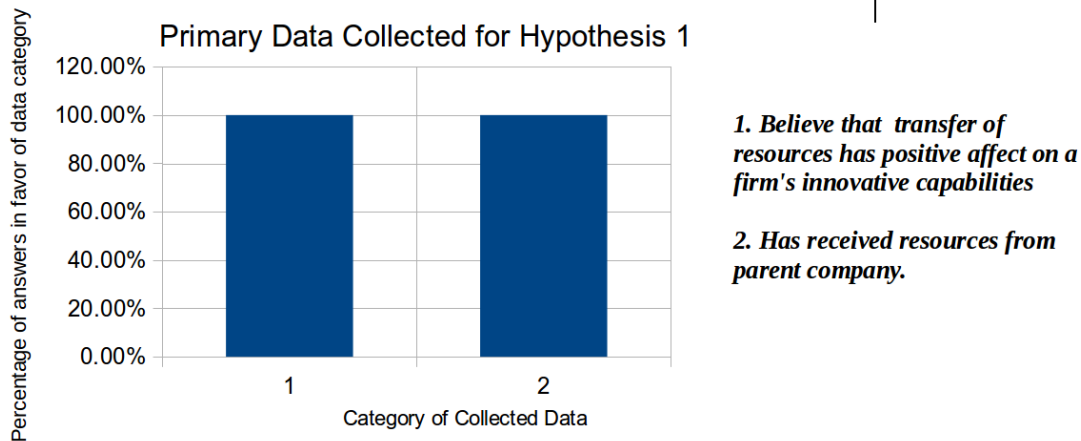


Figure 4.1: Data for Hypothesis 1

#### 4.4 Data For Hypothesis 2

This hypothesis states that previous industry experience and managerial skills help spin-offs to innovate better than start-ups. Questions asked to respondents for testing this hypothesis were about previous work experience and managerial skills before joining the current organizations. Figure 4.2 shows the results of questions asked for testing Hypothesis 2.

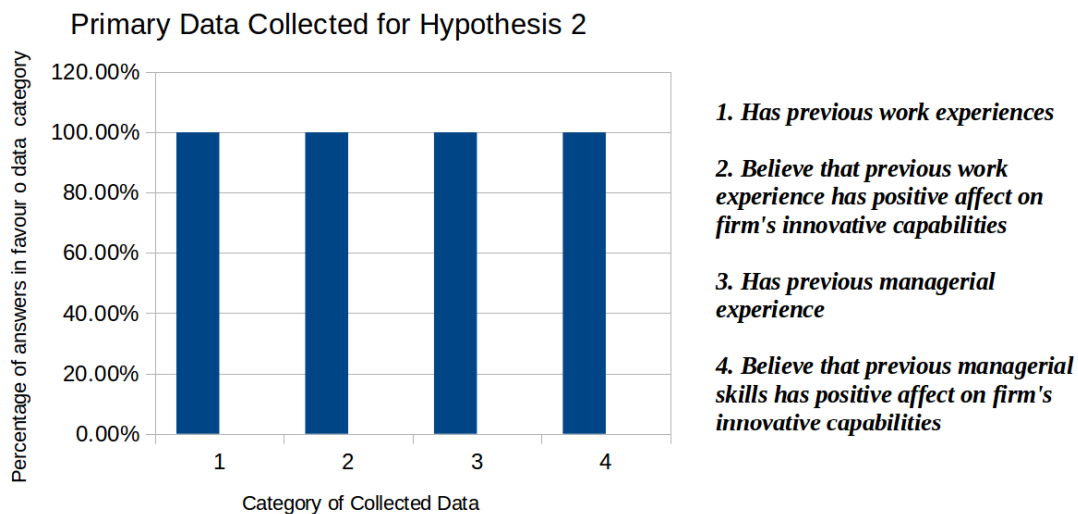


Figure 4.2: Data for Hypothesis 2

Table 4.4 shows the secondary research results used for hypothesis 2.

Type of resource	Title	Authors	Publishing Year	Findings
Research Paper	Do direct or indirect relations between incumbent firms and corporate spin-offs affect the performance of spin-offs?	Majbritt Rostgaard Evald, Ann Hojbjerg Clarke, Kent Wickstrom Jensen	2009	Resources received by spin-offs through direct or indirect relationships with parent firms help them to perform better than independent start-ups. However, spin-offs with indirect relations to a parent firm perform better than spin-offs having direct relations [36].
Research Paper	Whose child?: how existing firms foster new firm formation	Sierdjan Koster	2006	Transfer of resources between firms does not always guarantee the success of spin- off. Resources lose their previous designations and position and needs to be managed effectively in the receiving firm [6].

Table 4.3: Secondary Research Data for Hypothesis 1

## 4.5 Data For Hypothesis 3

This hypothesis states that networking and relationships with clients and organizations help spin- offs in their growth and progress. Questions asked to respondents for testing this hypothesis were about previous networking with clients or other firms before starting their ventures. Figure 4.3 shows the results of questions asked for testing Hypothesis 3.

Table 4.5 shows the secondary research results used for hypothesis 3.



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Type of resource	Title	Authors	Publishing Year	Findings
Research paper	The effectiveness of university knowledge spillovers: Performance differences between university spinoffs and corporate spinoffs	Karl Wennberg, Johan Wiklund, Mike Wright	2011	Previous industry experience in private corporations proves to be potentially more valuable for spin-off performance in than university experience alone [55]
Book	Success Factors of Corporat Spin-Off	Alexander Tbke	2004	Author has described transfer of experience as one of the success factors for spin-offs. He has mentioned that managerial skills are more valuable to progressive growth of a business venture than technical skills. He has given importance to different types of experiences transferred in spin-off development process e.g. market and product related, technical, managerial and leadership [56]

Table 4.4: Secondary Research Data for Hypothesis 2

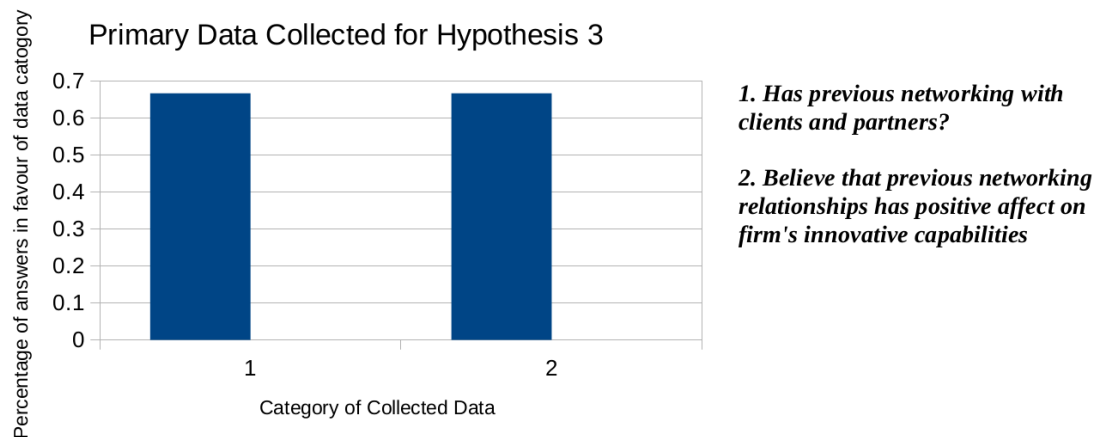


Figure 4.3: Data for Hypothesis 3

## 4.6 Data For Hypothesis 4

This hypothesis states that lacking the desire and passion while joining a spin-off has bad affects on innovation development of business. Questions asked to respondents for testing this hypothesis were about their motivations while joining the firms. Figure 4.4 shows the results of questions asked for testing Hypothesis 4.

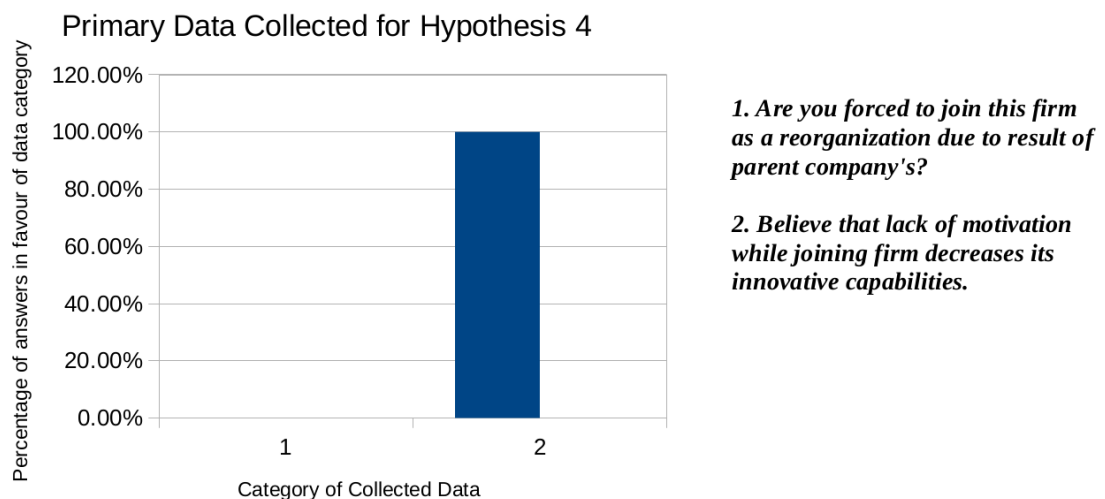


Figure 4.4: Data for Hypothesis 4

Table 4.6 shows the secondary research results used for hypothesis 4.

Type of resource	Title	Authors	Publishing Year	Findings
Research Paper	Parent company influence on spin-off performance	Tatsiana Halai	2015	Networking provides open access to potential clients, finances and supplies for product development. If the parent company has good reputation. It helps spin-offs to get more faith from clients and external relationships [57].
Research Paper	Spin-off firms and individual start-ups. Are they really different?	Sierdjan Koster	2004	Theoretical ideas, based on resource theory, spin-offs perform better than start-ups based on their capabilities of finding ways to establish networks with relevant businesses [32].

Table 4.5: Secondary Research Data for Hypothesis 3

Type of resource	Title	Authors	Publishing Year	Findings
Book	A Theoretical and Empirical Analysis, with Special Reference to Education, Second Edition	Gary S. Becker	1975	Motivation is one of the major factors affecting productivity of employees. Large investments on human capital and increase in earnings affects employees morale which in turn affects companys growth [39].
Book	Success Factors of Corporate Spin-Off	Alexander Tbke	2004	Author has discussed motivational factor as an important factor affecting the performance of spin-off. He has mentioned that when employees are forced to join spin-offs against their will in the times of parent internal crisis, businesses fail badly [56].

Table 4.6: Secondary Research Data for Hypothesis 4

## **5 Analysis and Results**

In this section, results of primary and secondary research will be analyzed. Based on analysis, hypotheses will be tested and results will be explained.

### **5.1 Analysis and Findings For Hypothesis 1**

In primary research, all respondents of questionnaire agreed to the positive affects of resource transfer on the success of spin-off. However, some researchers believed that transferring of resources could hinders the progress of spin-off ,if not managed effectively. Some researchers argued that it deprives spin-off from independence and flexibility of performing operations which negatively affects the spin-off innovation capabilities. However, majority of secondary research results are in favor of hypothesis 1.

### **5.2 Analysis and Findings For Hypothesis 2**

All respondents of questionnaire answered in favor of hypothesis 2. In addition, literature reviews also supported the fact that previous industry experience and management skills help spin-offs to outperform individual start-ups in early stages of development.

### **5.3 Analysis and Findings For Hypothesis 3**

Two respondents (Imsys and Conatix) had previous networking relationships and believed that it helped in innovation development. However, PTX tech GmbH, a Berlin based start-up, has no previous connections with clients and its CEO believed that it had no affect on its innovation capabilities. Results of secondary research are in favor of hypothesis 3. Since majority of results support hypothesis 3, it appears that previous external relations with clients and providers help spin- offs to perform better than start-ups which do not have any networking with potential clients.

### **5.4 Analysis and Findings For Hypothesis 4**

Both primary and secondary research support hypothesis 4. All respondents believed that lack of motivation is a major factor affecting the progress of a firm. In literature, researchers also believed that businesses with motivated and passionate employees flourish with bright colors.



## **6 Conclusion**

Main purpose of this research was to investigate the differences between innovation capabilities of spin-offs and start-ups. In order to achieve goal of this study, hypotheses were developed regarding major factors affecting innovation capabilities of spin-offs and start-ups. Four major factors were chosen using literary theories which are resource-based theory, human capital theory, social capital theory and motivational theory. In order to test hypotheses, qualitative methodology is used. Questionnaire was being sent to three respondents which hold administrative and managerial positions in the spin-offs and start-ups. For secondary research, books and research papers were consulted. The results showed that transfer of resources from parent companies, previous industry experience, management skills and networking relations help spin-offs to perform better than individual start-ups. However, spin-offs which are developed as a result of adverse affects and inefficient driving forces in parent companies, cause lack of motivation in employees which badly affects performance.

### **6.1 Potential Benefits**

The conclusion of this research will help future researchers in comparative studies of spin-offs and start-ups. It will help to further investigate the factors affecting innovation capabilities of firms. Moreover, it can be useful to business owners for understanding the reasons for success and failures of firms ,develop strategies for innovation development and evaluate main challenges on road of success.

### **6.2 Future Work**

This research can be used for future investigation of important factors impacting the development of innovation activities of firms. More in-depth investigation and interviews can be conducted to make the results of this study more reliable. For future work, it would be very interesting to investigate factors impacting innovation of spin-offs and start-ups in different countries and in different development stages of firms.





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# Appendix A

This appendix provides answers of the web questionnaire sent to collect data for this paper. It includes responses of all respondents in the form of a document published on web [51].



## PTX Tech GmbH Response

Start Time: 2:02pm on July 09, 2017

Duration: 3 minutes

Percent Complete: 93% (13 out of 14)

**1) What is the name of your company you are working with?**

PTX tech GmbH

**2) Is your firm a startup or spin-off?**

startup

**3) What is the your role in this firm?**

CEO

**4) For how long are your working in this firm?**

- ☐ less than one year
- ☐ less than three years
- ☒ less than five years
- ☐ more than five years

**5) Do you have previous work experience before joining your current firm?**



☒ Yes

☐ No

**6) Do you believe that your work experience has positive affect on your firm's innovative capabilities?**

☒ yes

☐ No

**7) If your firm is spin-off, has it got any tangible or intangible resources transferred from its parent company? If yes, please specify the type of resources it received from its parent company.**

*No Answer. The respondent skipped this question.*

**8) Do you feel that transfer of knowledge and other resources from parent company helps spin-offs to innovate better?**

☒ Yes

☐ No

**9) Do you have any previous managerial experience?**

☒ Yes

☐ No

**10) Do you believe that previous managerial experience helps to enhance innovation process in the firm?**

☒ Yes

☐ No

**11) Does your firm has any previous networking with clients and partners?**

☐ yes

☒ No

**12) Do you believe that previous networking capabilities help firms to innovate better?**

☐ Yes

☒ No

*Comparison of Spinoffs vs StartsUps in innovation capabilities*

**13) Are you forced to join this firm as a reorganization due to result of parent company's decision to create a spin-off?**

☐ Yes

☒ No

**14) Do you believe that lack of motivation while joining the firm decrease innovation capabilities of a firm?**

☒ Yes

☐ No



# Imsys Response

Start Time: 2:51pm on July 09, 2017

Duration: 5 minutes

Percent Complete: 93% (13 out of 14)

**1) What is the name of your company you are working with?**

Imsys

**2) Is your firm a startup or spin-off?**

Start-up

**3) What is the your role in this firm?**

Business development

**4) For how long are your working in this firm?**

- ☐ less than one year
- ☐ less than three years
- ☐ less than five years
- ☒ more than five years

**5) Do you have previous work experience before joining your current firm?**

*Comparison of Spinoffs vs StartsUps in innovation capabilities*

☒ Yes

☐ No

**6) Do you believe that your work experience has positive affect on your firm's innovative capabilities?**

☒ yes

☐ No

**7) If your firm is spin-off, has it got any tangible or intangible resources transferred from its parent company? If yes, please specify the type of resources it received from its parent company.**

*No Answer. The respondent skipped this question.*

**8) Do you feel that transfer of knowledge and other resources from parent company helps spin-offs to innovate better?**

☒ Yes

☐ No

**9) Do you have any previous managerial experience?**

☒ Yes

☐ No

**10) Do you believe that previous managerial experience helps to enhance innovation process in the firm?**

☒ Yes

☐ No

**11) Does your firm has any previous networking with clients and partners?**

☒ yes

☐ No

**12) Do you believe that previous networking capabilities help firms to innovate better?**

☒ Yes

☐ No

**13) Are you forced to join this firm as a reorganization due to result of parent company's decision to create a spin-off?**

☐ Yes

☒ No

**14) Do you believe that lack of motivation while joining the firm decrease innovation capabilities of a firm?**

☒ Yes

☐ No



# Conatix Response

Start Time: 12:23am on July 24, 2017

Duration: 3 minutes

Percent Complete: 100% (14 out of 14)

**1) What is the name of your company you are working with?**

Conatix

**2) Is your firm a startup or spin-off?**

We could be called either one. We are considered a spin-off of Humboldt University Berlin but we developed our own proprietary technology.

**3) What is the your role in this firm?**

CEO

**4) For how long are your working in this firm?**

- ☐ less than one year
- ☐ less than three years
- ☐ less than five years
- ☒ more than five years

**5) Do you have previous work experience before joining your current firm?**

*Comparison of Spinoffs vs Startups in innovation capabilities*

☒ Yes

☐ No

**6) Do you believe that your work experience has positive affect on your firm's innovative capabilities?**

☒ yes

☐ No

**7) If your firm is spin-off, has it got any tangible or intangible resources transferred from its parent company? If yes, please specify the type of resources it received from its parent company.**

We received free and discounted use of office space from Humboldt University Berlin which was valuable in the beginning, also servers and other old and used equipment from the university

**8) Do you feel that transfer of knowledge and other resources from parent company helps spin-offs to innovate better?**

☒ Yes

☐ No

**9) Do you have any previous managerial experience?**

☒ Yes

☐ No

**10) Do you believe that previous managerial experience helps to enhance innovation process in the firm?**

☒ Yes

☐ No

**11) Does your firm has any previous networking with clients and partners?**

☒ yes

☐ No

**12) Do you believe that previous networking capabilities help firms to innovate better?**

*Comparison of Spinoffs vs StartsUps in innovation capabilities*

☒ Yes

☐ No

**13) Are you forced to join this firm as a reorganization due to result of parent company's decision to create a spin-off?**

☐ Yes

☒ No

**14) Do you believe that lack of motivation while joining the firm decrease innovation capabilities of a firm?**

☒ Yes

☐ No