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ROLE OF INNOVATION AND TECHNOLOGY TRANSFER AS AN INTEGRAL PART OF BUSINESS DEVELOPMENT

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Abstract:

One field is attracting rising attention in this era of growing concern about the fair use of limited resources. This field includes optimizing the value of the overwhelming quantity of technology and innovative knowledge that has developed over the past few decades. Innovation will contribute considerably to the economic and social growth of a country. This is particularly so in the situation of technical innovation. New technologies increase the value of goods and services, thereby creating income. Technologies are transferred to another party in the process of developing and commercializing those new technologies in order to further develop or commercialize them. In order to ensure that scientific and technical advances are available to a wide range of users, technology transfer is the process of sharing knowledge, technologies and manufacturing processes between various organizations

Universities have become recognized over the years as development hubs seeking to partner with corporations to develop new products. In this partnership. The goal of this paper is to evaluate systematically the technological transformation generated by partnerships between the universities and the industry. In this paper the authors discuss technology transfers as an important means of innovation generation and an integral part of business development also explore the theory, methodology and practice of technology transfer management in order to justify the components of the process for triggering the involvement of businesses in these mechanisms. Identify the requirements for the efficiency of the processes studied and substantiate suggestions for the implementation of the stages of technology transfer in the process of creative enterprise growth.

Keywords: Innovation process, Technology, Technological transfer, Universities.

Introduction

In recent years, policy makers in particular are looking at the use of university based education to turn it in development by further imposing directives and motivating the company to boost commercialisation efforts through increased practices and guidelines (Etzkowitz, 2000). In terms of structural instability and competitive challenges throughout and stress over corporate businesses, the capacity they possess to innovate to help to ensure competitiveness is a key requirement for success and their role is critical for businesses that have only been stepping in technology growth and transformation as part of technology development processes. With an increasingly important the theological aspect of economic growth becoming, the question of systematically adopting such technology is becoming critically relevant and gives the group a long-term competitive advantage overall management is also important. Therefore, in order to safeguard technical growth, it is necessary for the academic capacity both to develop and to establish capacities to create technology.

Using study results and data collected at the universities is a key instrument for increasing economic development in the community. "In order to a significant extent, the links between industry and science are explained by efficient university-based transfer systems of information for transaction. That can be the out-licensing of University dealings, the creation of new business spin-out trenches and academic engagements in various interactive systems (conference, joint project, publication) in the spin-out funnel. It can be the same by not only University patent agreements.

Innovations are created when new knowledge finds applications and thus the users use it (Tidd, 2001) In terms of innovation systems and systems, universities may have various roles. Knowledge builders need to shift from concentrating on the principles of university groups to those of relevant interested (Carayannis, 2010). The innovation paradigm emphasizes how companies use specific ideas to develop fresh products and services as interaction with customers and also as an additional resources of learning (Chesbrough, 2003). In this framework, even if it involves several hurdles and obstructions such as differences between cultures and difficulties in creating deep long-term relationships, universities can be viewed as an important source of external research for industry and a potentially significant innovation partner (Håkansson, 2009).

Businesses have initially limited independent study resources and technological bedrooms, but, at the same time, they have a need to further intensify collaboration with the productive industries without acquiring sufficient public funding. Creating a true cohesion across technology and energy policies. The majority of companies really require innovation rejuvenation, and this phased on technology transfer must be a key driver in this process today. The issue raised is therefore important and needs to be viewed from the point of view of reaping the benefits of all the opportunities that exist.

The goal of the paper is to explore the theory, methodology and practice of technology transfer management in order to justify the components of the process for triggering the involvement of businesses in these mechanisms. Identify the requirements for the efficiency of the processes studied and substantiate suggestions for the implementation of the stages of technology transfer in the process of creative enterprise growth. This study looks at the immersive essence of the process of transition, examines some of the policy frameworks that allow it to continue to explores effectively and, in particular, the role that can be played by as an essential component of policies aimed at stimulating diffusion, consultants for best practice in industrial practice.

Innovation management and Technology Transfer

Innovation is a technique to improve the enterprise with the goal of being, under more pious competing conditions, a healthy business place. A wide scope of creative sciences reveals that the application of organizational methodologies and the methods for change is considerably less likely to fail. Innovation management has to be clearly designed by company by organization type (big industry, middle and small sector firms and restrained internally constituted organisations) (as an objective). Under such cases, every solution to the market from the definition for large and medium companies aims to distinguish a general path. This method is designed and optimized for the specifications of the organization. Henri Chesbrough rendered the words: Actually, creativity includes organizational models, rather than simply inventions.

Many definitions were discussed in the literature on the field of growth Innovation management is defined under SR 13547 as a component of the overall management of an institution that handles one or more processes of growth through its strategic and operational component. Schumpeter (1934) describes innovation as implementing new technologies: the release of a fresh production or a new species; the enforcement of new methods; the opening of a new market; the purchase of new suppliers of raw materials, or the formation or dismantling of a monopoly organisation. New values (Thompson,1965) are being seen as the method of generating, accepting and implementing new ideas, procedures, goods and services, together with a result of new and any way of thinking, behaviours or things (Barnett, 1953), new conceptions (i.e. Van de Ven,86), modern technologies and practices (Nord and Tucker, 1987).

Technology transfer, known as the technology sharing of a business or organization (TOT), is the process of transferring technology from its owner or owner to any individual or organization. Such a transfer occurs between undertakings and the university community, (small medium-sized to large corporations or whatever their size), governments through a geopolitical zone, formally and informally and not unseen or covert. Such a transfer can be undertaken. It often happens through combined efforts to express experience, information, knowledge, technologies, production tools, samples and systems between the user.

Now many businesses, organization institutions and other public bodies have their Technology Transfer Office, the' Tech Transfer' as sometimes referred to as, which identifies research which has potential economic interest and approaches to how they can be adopted. A results of study may be of scientific and commercial interest, for example, but patents are usually only awarded for practical processes and a specific practical process must be developed by anyone, not essentially the researchers.

On behalf of academic organizations, governmental organizational bodies and even major corporations, the data transfer service boards may even carry out their works on behalf of technology transmission companies. Where start- ups, spins or spin-outs are the consumers, exchange charges are often waived instead of the sum of equity at the firm. Technology transfer organisations, including economy staff, lawyers and marketing business professionals, are frequently multi-disciplinary due to the likelihood of difficulty in the method of transformation of technology. Attention has been drawn in full on the complexities of technology transition systems, and there have been many focused groups and newspapers.

University technology transfer

The primary aim of technology transfer, by broader technical advancement, is to improve domestic economic development. Technology transmission is a direct contribution to technical innovation, by supplying the private sector with a new technology capability. For a prospective outlook of new products and programs for higher levels of opportunity, entrepreneurs will be helpful as universities will be compelled through the potential of effective licensing policies resulting in the growth of profits and an expanded employment situation that is attainable within graduates and industry partners. The theoretical framework (fig 2) stresses the importance of believing in the process between the individual researcher, the representative of the enterprise, and the promotion authority acting as a middle man in the process.

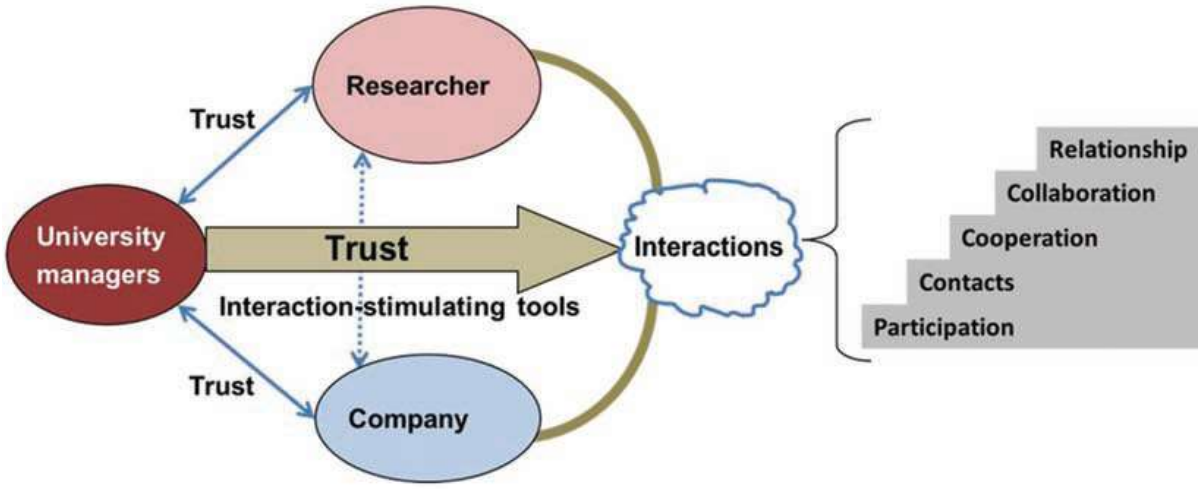

Fig 1: A theoretical framework over university–industry interactions (from Jonsson et al. 2014).

Technology Transition advancement offers technological experience on the university- business relationships policies, administration, and business interactions mechanism, transfer of technology to colleges, student venture participation, and proof of concept funds, as well as seed investment funds. This Innovation Transition Challenge aims to help universities improve their activities to bring in innovations, and to help the Venture Seed funds effectively conduct their efforts.

Biologists from the University of California, Berkeley, CA, USA and from Stanford University, LubertStrasher, pioneered the use of phycobiliproteins as fluorescent markers in marine algae. Six months later the University of Stanford entered into partnerships in patenting this discovery with two private sector companies and created an important method for the detection of blood and cancer. In the intervening 30 years, academic universities undertook to licence proprietary inventions and launch new business projects. (Wiesendanger, 2000). Many examples can be found. The goods and innovations developed by the university are well-known and include the following selected examples (see Tables 1): solar energy from MIT (Eschner 2017), computed tomography scan (CT) scans of the University of Georgetown (Langeer 2012), pivotal flu vaccine from the University of Rochester Medical Center (Hauser 2015; Wentzel 2008), rocket science of Clark University (Clark Univer) (Martin 2007).

Universities have an important role to play because of the innovative capacity available in relation to advances in entrepreneurial growth. Universities as well as college divisions have an operative landscape for programs that impact our way of life. From enriched milk and vitamin D to life-saving vaccines and cancer drugs, only a few thousand advances are offered each year that make the world better.

Figure 2. This dashboard shows the metrics reported by AUTM for 2018, exhibiting the impact of technology transfer in the US.

The innovative capacity of Universities should be targeted toward local, regional and external community needs in order to get them on the move and accelerate progress. In the mid-1980s, universities were rising a significant amount in tech promotion. Owing to many legitimate funding changes, changes on IP regulations, the establishment of consent and technical industries in education and teaching services, a lot of the criteria we can see is those that triggered software accessible equipment, namely as the promotion of the prime causes.

How technology is transferred?

The methods by which technical transferred by universities may occur are:

- Systematic methods by technological transfer mechanisms based on certain basic techniques.
- Informal media through direct cooperation between research systems and the companies

Since an intellectual property is owned by the university, that private commercial partner in the market or in the commercialisation field gains a partly exclusive or exclusive right to use the technologies and to grow those technologies. As a feature of the contract terms, the licensee is required to follow certain conditions as formulate a suitable production schedule for it, sell the innovation within a given period of time, and provide a financial resource for the university.

Technology Transfer Officers will periodically draw up an alternative arrangement that would grant third parties licenses authorisation to determine the feasibility of an integration of technology prior to licensing. The preference holder shall make payment of the costs of a patent during the time responsible for it. The substance continues to do so. Under the provisions of their contracts and without the involvement of the inventor, listed partners are then envisaged to promote them. This would depend on a desire for both the inventor and the licensor in using the knowledge of the former during the production process.

Technology Transfer Assessment

For an evaluation of the determinants of the transition of technology, the authors recommend using a contingent technology transfer performance model (Bozeman, 2000). The Contingent Effectiveness Model (Fig 1) is named on the basis that there are several priorities and performance requirements for the technology transfer partners. The model states the effect on who produces, how they do, what is transmitted and to whom can be understood through technology transfer.

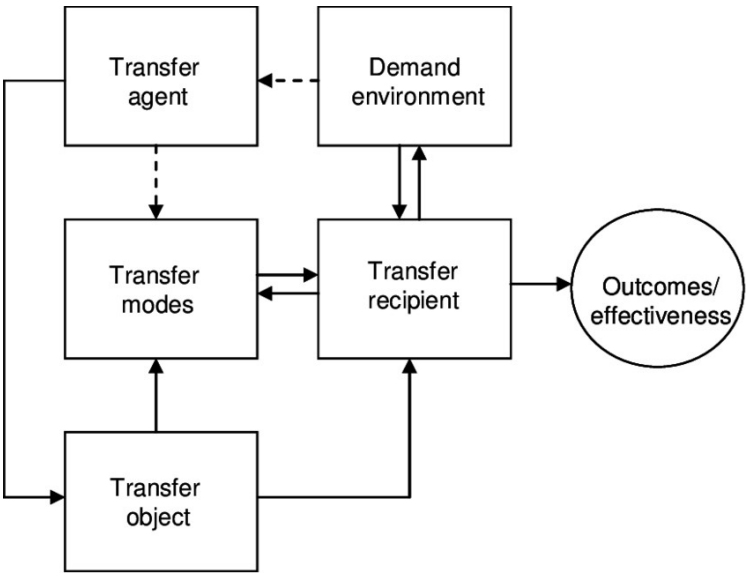

Fig 3: Contingent Effectiveness Model of Technology Transfer

Source: Contingent effectiveness model of technology transfer (Bozeman, 2000, p. 636; Bozeman et al, 2015, p.3)

The performance requirements are briefly illustrated in Table 1. The model comprises five large dimensions that define efficiency: (1) Transfer agent features, (2) transmission media attributes, (3) transfer object features, (4) the demand condition and (5) The transition recipient's characteristics. These dimensions are known to be fairly large to cover several of the variables analysed in university and governmental technology transfer studies.

Table 1 Dimensions of the Contingent Effectiveness Model

Dimensions of the Contingent Effectiveness Model

Dimension	Focus	Examples
Transfer agent	The institution or organization seeking to transfer the technology.	Government agency, university, private firm, characteristics of the setting, its culture, organization, personnel.
Transfer medium	The vehicle, formal or informal by which the technology is transferred.	License, copyright, CRADA, person-to-person, formal literature.
Transfer object	The content and form of what is transferred, the transfer entity.	Scientific knowledge, technological device, process, know-how, and specific characteristics of each.
Transfer recipient	The organization or institution receiving the transfer object.	Firm, agency, organization, consumer, informal group, institution and associated characteristics.
Demand environment	Factors (market and non-market) pertaining to the need for the transferred object.	Price for technology, substitutability, relation to technologies now used, subsidy, market shelters.

Source: Bozeman, 2000

Transfer Agent

Most of the literature on the functionality of the transfer agent The research efforts on university marketing concentrate on the society of Research institution or university. This involves studies into the resistance of researchers to marketing practices. McFarlane (1999) has found in Australia proof that the corporate perspectives on scientific knowledge have a conflict of interest with that held by academic researchers. Later, for reasons of status and career advancement, have historically been motivated to publishing of research results as soon as possible. Although former study results are more conservative in disclosing even though the actual market effect is not entirely apparent. Etzkowitz (1998) found, however, that significant improvements are taking place in the laws of academic science that contribute to a much more economically favourable climate for applied research. Study engagement with the industry (Rahm, 1994) and previous industrial experience among researchers included cultural problems affecting technology transfer efficiency (Fischer, 1994).

Rahm et al (1988) observed that those interested in fundamental science are less likely than those focused on technological growth to participate in technology transfer. In public science centres the negative relationship was much greater than in universities. In both environments, diversity in research missions was the best indicator for technology transition. Those centered in a limited way, regardless of their focus, were less likely than those centres with varied different missions to participate in technology transfer. Brown (1994) found out that there is a similar collection of problems for HEIs and public researches aimed at capitalizing on intellectual property properties through marketing research. First of all, market and trading skills are missing.

The disparity in the operational and institutional cultures of university and industrial companies was the major challenge, according to Jones-Evans et al (1999), in improving cooperation between academia and industry in all countries. This was often due to an inadequate understanding of universities' differences in developing academic study rather than industrial research, especially in terms of time-design, goals and bureaucracies. Industrial businesses must ensure that every research and development initiative is rapidly disseminated from the laboratory to the market.

Rank's (1999) study of the commercialization of university studies in Canada has shown that the scarcity of human capital with the right skills mix poses an important obstacle to the effectiveness of marketing. It is difficult for HEIs and public research centres to hire and maintain persons with the right skills and expertise. Even the best scholars are overworked and their first loyalties lie with their fundamental studies and students. There are concerns about investing extra time on marketing events. Carr (1992) found the transition agent's potential to successfully transfer technology. The essence of the institution's core role and expertise in the technology transition process affect this capacity. Colwell (2002) observed that technology transfer was more effective in those cases that the researchers were directly participating in all phases of the production and marketing process than in those in which the researcher was removed from the transfer.

Transfer object

In most nations, one essential aspect of R&D is the fact that the majority Instead of later periods, research efforts are focused at early R&D levels, which are related more closely to marketing. Public agencies and universities carry out about 60% of the country's research in Australia and about 85% are focused on research and not on growth (McFarlane, 1999). This factor in financing culminated in the completion of projects which have not yet entered the stage of construction suitable for marketing. While Richardson and others (1990 cited by Lyall et al. 2004) have argued that research of this nature cannot be used immediately or directly, they argue that all research is always as realistic as possible, particularly when it has the sponsorship of a government agency. A broad variety of types of research impacts may be described that include improvements in the way research is considered, responded to or read, paper references, changes in perception and information, changes in perceptions and values as well as behavioural changes. A variety of pathways for enhancing research effect have also been identified: distribution, educational, social power, researchers and user partnerships, motivation, comportment reinforcement and support. Walters et al. (2003) have established a range of obstacles from researchers and consumers to successful testing impacts. The obstacles to researchers concerned are the lack of funding (money and time), the lack of expertise and the lack of technical loans offered by disseminating science.

Transfer Medium

A technology transition process defines "any particular form in which technology is transferred to interact between two or more social bodies" (Autio and Laamanen, 1995, p. 648). Open literature, patents, copyright, registration, casual and personal sharing, demonstration onsite and versatility of researchers Transition Media (Bozeman, 2000). The organizational framework of moving technology in research institutions is also relevant (Bercovitz et al., 2001; Debackere and Veugelers, 2005). Bercovitz et al. (2001) addressed a decentralized technology transition model, whereby the transfers are located in close proximity to study groups and individual researchers. There is sufficient administration funding that enables the researchers to focus on research and development activities and the sharing of expertise. In the decentralized model is also inherent the creation of a technology transfer organization.

Rogers et al. (2001) launched five channels of dissemination of technology. A spin-off is a new corporation made up of former parent company staff who have moved key inventions from a parent organization (Rogers and Steffensen, 1999). Smilor (1990) described research- based spin-offs as enterprises created by the formal and informal transfers of technology or expertise by public research organisations (cited in Mustar et al., 2006). Licensing requires a person who is entitled to grant that consent to make, use and/or sell a certain product, design or procedure or to carry out such other actions. Licensing royalty can earn considerable income for a research university or a national research and development laboratory. Another way of knowledge transfer is presentations in the form of papers written in scholarly journals.

Journal papers are sadly mainly written for academics and not for future research customers. A number of channels and processes are used for the translation of intellectual expertise into productive knowledge, through the direct use of knowledge data, the use of instrumentalities, methods and context knowledge by highly skilled human capital (Fontes, 2005). The direct use of information produced by research organizations in the industrial sector is potentially troublesome. Institutions for technology transfer are a conduit that enables emerging technologies to funnel from information providers, science and study, consumers and businesses in particular (European Commission, 2004). The awareness of researchers in the public science organization is a success driver for technology transfer organizations. Concerns of knowledge of technology transfer on the one side in general, and of technology transfer organizations exposure of workers within the public research agency on the other.

The four forms of technology transition strategy have been defined by Shama (1992). A knowledge distribution passive technology transfers approach uses one metric to show its efficacy, i.e. the number of disseminations or answers to questions. A successful technology transition policy aims at effectively moving technology to the market by disseminating information and approving technology to the private sector. A business technology transition approach relies on marketing technology built by laboratories that will play an active role in emerging entrepreneurship training. A plan to boost the social and economic well-being of national productivity.

Transfer recipient

The business, industry and innovation system's absorption abilities play an important role in the process of technology transfer (Salter and Martin, 2001). The efficiency of transition processes depends heavily on absorbing capabilities of companies according to Amesse and Cohendet (2001). Molas-Gallart et al (1999) found that the findings of studies cannot be taken into account when seeking to calculate the effect of public research, not because of any flaws in the research results or distribution policy, but because prospective participants are reluctant or unable to utilize the resources provided by them.

Cohen and Levinthal (1990) describe the creation of absorption potential as a by-product of investment R&D and manufacturing operations of a corporation. In addition, the industry research activities have two complementary aspects, according to Joly and Mangematin (1996): it certainly leads to the production of awareness and intelligence, but it also offers a learning mechanism to improve absorption. Roessner (1993) found that there was growing interest in partnering with federal labs as internal R&D funding declined. Lin (1997) indicated that technology-receiving organizations need a specific degree of technical capability to implement technology effectively during the technology transition process. He indicated that technical capacity is a multi-dimensional term, defined as the willingness of beneficiaries to acquire new technologies from outside. Six technical capability indicators were defined at organizational level: skills, budget, infrastructure, production, knowledge and management power.

Kingsley et al. (1996) described technology absorbing as utilizing a technology or information contract established within the government-sponsored project by vendors, subcontractors or co-sponsors involved. Four absorption compounds were specified by Giuliani and Bell (2005): (a) the amount of preparation offered by technical workers employed by that company; (d) the monthly experience in the industry for each professional;

(c) the number of companies previously employed by each professional; and (d) the form and strength of market and study activities performed by the firm.

Demand Environment

If there is a substantial distance between industry and the research community, the chances of a transition of expertise from the research community to private businesses are diminished (Drejer and Jorgensen, 2004). However, even though industry has the requisite absorption potential, other obstacles can impede information transfer between the public and industry.

Differences between public research institutes and private corporations are among these hurdles. When the business and research community vary a lot, the odds of a transition from research to private companies are decreased (Drejer and Jorgensen, 2004).

While industry has the required absorption capacity, other barriers will hinder the flow of knowledge between industry and the public. Among these obstacles are gaps between public institutes of study and private businesses. Patents are also interested in exploiting emerging inventions on a commercial basis. A research entity should only use a patent if it is interested in economically developing a new discovery and is either interested in or collaborating with an industry partner. A high patent portion of research establishments can therefore be regarded as a strong predictor for a close association between scientific and industrial laboratories in the field of technology analyzed (Meyer-Krahmer and Schmoch, 1998).

Measurement of Technology Transfer

A well-organized approach is more much simpler to function and carry out, indicating that all aspects of the procedure must be well described. There is no consensus as to whether the IP security has proved positive to universities in their research. However, it is appropriate to make claims on patents and permits as regards marketed technologies or inventions. University research has been recognized as valuable for business practices in creativity (Mowery, 2006). There is general consensus between all authors that university study is a significant industrial tool and drives steady growth. Schartinger et al. (2002) reported on knowledge-based relationship assessment. Several analyzes rely on facets of information that are measured reasonably quickly due to their clear and codified character, such as citations to university patent publications or corporate publications, licensing of corporative university patents, joint university and company representatives' publishing practices. The restricted range of information

flows covered is a significant limitation of these methods. This method of study does not discuss various kinds of personal contacts and related implicit information flows. Another means of assessing awareness sharing is to ask business and academic researchers how they communicate with the information they share and the value of these styles.

Conclusion

A University is a suitable for the production by faith as a company partner for growth. As part of regulatory agreements, technological transfer takes place. Under University technology transition arrangements, centres designed to advance the transformation of technology are created by the organization of IT efforts in relation with information security and the link to business ventures with the working environment. Both partners take advantage of productive transition to us. In the one hand, the institution is able to uphold privacy rights of technology. Profits from licenses will also be guided back to the analysis and teaching business.

A university technology allowing for companies to hide a college in a number of manners, including forting a leg up on industry rivals, reducing R&D costs and achieving greater pace into the market. Again, these collaborations aim to set up long lasting and precious university collaboration opportunities, which may exploit in future years.

Further analysis is, however, important to validate this worldwide. Based on the interaction between creativity and diffusion of inventions, instruments, strategies and approaches from one area to another studied can be considered relevant. Finding the value of technology transfer for the creation of a certain level of newness requires further study. For prospective studies it is therefore proposed to do a meta-examination of the connections between novelty and organisation's success using the structural literary analysis method.

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