A study of trends and challenges of embedded innovation (EI) in multinational mobile telecoms in Jordan.

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Chapter 1.   Introduction

1.1 Background to the study

In a contemporary, technologically advanced era, information and communication technologies play a prime role in corporations' quest for innovation. However, the environmental complexities and increased competition in the corporate world have made the sole reliance of organisations on ICT services and systems inadequate. Today, organisations must adopt holistic views for attaining sustainable competitive edge based on innovation (Gressgard et al., 2014). Tools, processes and people are responsible for fostering innovation within the organisation as well as capitalising its benefits. Researchers contend that successful integration and capitalisation of innovation relies on the functionality of these three elements. Hence, ICTs should be integrated and aligned with the adaptation of organisational structure and process for effective innovation process (Hafkesbrink & Schroll, (2011).

Successful innovation requires an intricate alignment of both capital and human resources along with efficient distribution and diffusion of knowledge to certify the successful adoption and commercialisation of innovation (Nesheim & Gressgård, 2014). This feature of complexity has triggered an intense argument between proponents of a protective innovation strategy who advocate the protection of the organisation's innovation process to avoid the imitation of firm's competitive advantage, and supporters of collaborative innovation approach, founded on effective knowledge disbursement and capitalising organisation's network (Adner, 2006). Firm's resource-based view contends that organisations can attain sustainable competitive advantage by possessing non-substitutable, inimitable, rare and valuable resources. In this case, the innovation based success relies on the organisation's ability to convert these resources into core competencies and strategic capabilities. A technologically innovative organisation can gain competitive advantage through the effective exploitation of its core competencies and valuable resources. In such case, an isolating mechanism is required to maintain the competitive edge, which includes information asymmetry. It means that the organisation has an exclusive access to a transaction as compared to its competitors (Hafkesbrink & Schroll, 2011). However, the current perspective suggests that sustainable competitive advantage could be derived by integrating the innovation into business processes rather than relying on resource based

perspective (Li, Huang & Tsai, 2009). Hence, this study aims to highlight the challenges faced by Jordanian telecom organisations and assess their perceptions towards embedded innovation for the accomplishment of business objectives in a highly-saturated market. In doing so, the research will explore the mechanism and processes of building a system for embedded innovation.

Within a resource-based perspective, knowledge is considered extremely important to preserve the competitive advantage (Lin & Wu, 2014). Whereas, recent researchers contend that the resource-based theory has lost its relevance with contemporary era to a great extent. Today, we live in an era where digitalisation of information has made it almost impossible for organisations to attain and sustain a technology based competitive advantage in the long-run. Previously, the knowledge was regarded as a resource, (as suggested by the firm's resource based perspective) but today, the knowledge is regarded as a process initiated by collaborating with the stakeholders and results in the fulfilment of their implied needs (Li, Huang & Tsai, 2009). Recent theories emphasize the knowledge sharing and collaborative innovation. The theorists contend that it is not possible to develop the innovation in a vacuum (Adner, 2006). They further argue that technological innovation requires a complicated structure of supportive technologies and services that an organisation cannot handle without collaborating with other parties. The debate does not only entail a vibrant research topic in academia, but, contemporary organisations pursuing innovation are also showing extreme concern, as their survival in a highly turbulent environment has become challenging than ever before. These organisations struggle to choose between the collaborative innovation strategies or resource based strategy. In the latter case, they can probably miss out the advantages of supportive knowledge and collaboration with customers, suppliers and competitors (Lin & Wu, 2014).

"Competition is essential to the innovation process and to capitalist economic development more generally. But so is cooperation. The challenge to policy analysts and to managers is to find the right balance of competition and cooperation, and the appropriate institutional structures within which competition and cooperation ought to take place." (Teece, 1990, p. 1).

The current scholarly debate in innovation studies revolves around the transformation from a resource-based, linear innovation model to an open, systematic and user-centric innovation model. There are two types of processes to develop innovation systems. They could be through competitiveness or through cooperation and both of them would be considered

leaner. However the current innovation debate emphasises that this linear model will not lead to successful innovation. The other structure is non-leaner innovation model, which is open and systematically consider stakeholders such as including suppliers, users, government, supply chain partners and broader society. Researchers are interested in exploring how knowledge creation develops under unique and new innovation paradigm (Carayannis, Barth & Campbell, 2012). For instance, the quadruple helix innovation model proposes that knowledge creation and utilisation occurs in non-linear and highly interactive modes, in different multifactor innovation networks, and involves collaboration with all stakeholders including suppliers, users, government, supply chain partners and broader society. The issue is how contemporary organisations can select between completely linear and utterly non-linear innovation models (Dubina, Carayannis & Campbell, 2012). Contending on the same note, a previous researcher has made the following comment:

The above comment suggests that while functioning in a hypercompetitive market, the firms cannot ensure sustainability until they adopt a collaborative approach with all stakeholders. Such collaboration depends on the innovative communication style and results into strengthened competitive positioning at marketplace. "Competitive pressure" is one of the biggest challenges of contemporary organisations that can be addressed by ensuring effective collaboration with primary stakeholder- as suggested by embedded innovation (Boyer, 2003).

Invariably, the term "embeddedness" has been introduced to address the current innovation challenges being faced by contemporary organisations. This introduction has marked the increasing challenge of substantial integration of firms into surrounding community to ensure that their exploitable knowledge has been well absorbed organic (Hafkesbrink and Evers, 2010). Granovetter (1985) has already marked the organisations' social embeddedness approach and researcher has supported the argument in the context of contemporary economic sociology. The shift from innovation 1.0 (closed innovation) to innovation 3.0 (embedded innovation) needs to be realised by proactive organisations if they are seeking a long-term survival in such a turbulent scenario. This shift has transformed various traditional management practices by opening various formal and informal communication channels to foster the knowledge flow. The previous innovation models were closed in a way that they allowed a one-way flow of innovative ideas, hindering the

management's ability to maximise the business potential. Later, the open innovation models were introduced that to a great extent, they resolved the issues associated with previous innovation models. However, the open innovation models also have their own limitations. These include increased reliance on the external knowledge sources and expensive collaboration with the external stakeholders. To overcome these weaknesses, the latest innovation model, "innovation 3.0" has surpassed the closed innovation (also called "Innovation 1.0") and open innovation (also called "Innovation 2.0"). The innovation 3.0 has theoretically embraced the ambidextrous structural capabilities of using institutional arrangements for the accomplishment of the embedding process (O'Reilly and Tushman, 2008). These institutional arrangements can be explicit (in the form of formal contracts with other parties), implicit (such as cultivation of a trust culture), exploitative or explorative, mechanic or organic (Hafkesbrink and Evers, 2010), depending on the relationship characteristics, the phase and the nature of overall innovation process.

Embedded innovation offers a more inclusive approach to service innovation where multinational telecoms can engage end-users in the experimentation and design of their services. Simon & Hart (2009) defines embedded innovation as the process of creating long-term, sustainable sources of growth and re-embed consumers, potential customers, and producers to generate an infinite number of new services, products, markets and business enterprises in the current economy. Noordhoff et al (2011) define embedded innovation as the interaction between the supplier and the customers' innovative knowledge to influence innovation, as well as to what degree they benefit from customer relationships. Van der Meer & van Zwieten (2010) define innovation as the total set of activities that lead to the introduction of something new that gives the company defendable competitive advantage. Hassink (2001) defined embeddedness as the firm's interactive learning from other institutions in the direct environment (rivals, suppliers, and regulators) to a high level of inclusiveness. Schumpeter (1950) points out that innovation not only affects current profits and output of the firms but also makes fundamental changes in the organisations, lives, and people.

The integration of innovation 3.0 or embedded innovation has become crucial for modern business enterprises. The businesses operating in a highly competitive industry need to innovate continuously to strengthen their competitive position in the market and increase the survival chances in a highly competitive scenario (Hafkesbrink & Schroll, 2011). Embedded Innovation (EI) is considered a sustainable approach for enhancing service

innovation in multinational information and communication technology providers. Telecom sector is one of the advanced ICT providers facing tight competition in a highly saturated local and global market. However, telecom organisations can mitigate the competitive pressure through effective integration of embedded innovation based on external knowledge acquired from the product users and combining knowledge of market needs and technological solution principles (Hafkesbrink & Evers, 2010).

After describing the background to the study, the next section provides a brief overview of the Jordan Telecom Sector before stating the research problem. The next section clarifies how these issues shape the innovation systems in the Jordanian telecoms.

1.2 Jordan Telecom Sector

In response to the substantial transformations occurring at the global stage, Jordanian telecom organisations are facing various challenges. Today, the competition has outdated the traditional ways in which mobile services were designed and developed. The success of modern telecom enterprises is dependent on their ability to develop innovative business strategies that are effectively aligned with the overall corporate strategy (Zabadi, 2016). However, capturing value from mobile data services has proven difficult. One key indicator is that revenues generated from services other than voice telephony and SMS are below expectations (Sutherland, 2016; Loudon 2016), even though the number of mobile users worldwide is continuously increasing (ITU, 2015). This research addresses the motives, diffusion processes and challenges of embedded innovation in Jordanian telecommunication market. The telecommunication industry is constantly changing and growing in line with the customers' demands and needs. Given the significantly differentiated capabilities and competencies amongst telecommunication firms as an expected contribution, the findings of this study will enhance our knowledge of the innovation diffusion and embedded innovation in chosen research context.

1.3 Research Problem

Amid enormous intellectual and administrative momentum, rapid technological advancement, globalisation and increased environmental turbulence have brought major transformations in the business world (Souza & El Ghazouani, 2016). Today, organisations

are induced to continually assess the competitive environment and adopt a proactive approach in translating the random data coming from such environment into meaningful insights (Nayar, 2015). The business intelligence can be achieved by making the optimal use of knowledge acquired from various sources. Ironically Jordanian business do not realize that sustainable entrepreneurship cannot be achieved without embedding innovation in the business strategy, especially in a highly turbulent environment (Muita, 2013).

In developing markets like Jordan, such advanced concepts are regarded as virgin research areas. In the western world, these notions have received considerable importance, which is evidence that the world has moved from era of information technology to era of intelligence. According to Schlick, Jordanian Telecoms must integrate and embed innovation into their structure to enhance their competitive positioning and ensure survival in the long-run (Schlick, 2016). Due to the importance of the Jordanian telecom sector, its closer association with the regional and national economy, its rapid development during the last few years, intense market competition and saturation, the key market players must recognise the significance of embedded innovation for successful accomplishment of organisational goals at national and international stage (Dishman & Calof, 2008).

Nevertheless, it is also important to consider that various organisations attempting to integrate the innovation to achieve sustainable competitive advantage get disappointed when they cannot realise the tangible results. Management should understand that innovation system are abstract by nature and often produce intangible results that cannot be evaluated and measured by traditional ways (Calof & Wright, 2008). Resultantly, senior management demonstrates an unwillingness to invest in embedded innovation until a tangible improvement in the form of enhanced financial indicators is visible. Researchers are required to identify the challenges and perceptions of senior management towards embedded innovation with an aim to offer meaningful and convincing recommendations in favour of embedded innovation (Yassine, 2014).

In the context of Jordan, the telecom sector is already facing intense competition and the market has attained its saturation stage. Academic sources have reported that in the Jordanian telecom industry, charges and costs are eating the profits due to market saturation and the continuous influx of new entrants. The market is currently having an extremely high penetration rate of 155 percent (Fraij, 2015). According to the ranking given by an Arab advisory group, such market is the second highest competitive market in the Middle East

region, next to the Saudi Arabian market. Oxford Business Group (2014) has reported that the Jordanian telecom sector is facing intense pressure due to various state levies imposed recently.

The telecom report published by Orange, Umniah and Zain Jordan as cited in Alomari & Elrehail (2013) stated that their combined revenue has decreased sharply by 9 percent after the recent increase in tax. The Orange, Umniah and Zain are the Jordanian telecom organizations, and currently the key player of this industry. They proposed that the impact on profits is more severe, resulting in a decline by 30 to 40 percent. The tax on mobile devices has increased from 8 percent to 16 percent, whereas, levy on mobile subscriptions has increased from 12 percent to 24 percent (as cited in Alomari & Elrehail, 2013). Academic sources have further revealed that government is ready to issue a fourth telecommunication license for a new key telecom player in the Jordanian market. Recently, the Jordanian government launched a tender that facilitates the entrance of new market player and paved the way for 4G services. Orange, Zain and Umniah telecom skipped the tender and contended that entry of a new market player will have a substantial negative influence on their earnings as well as on the whole telecom market. The entrance of new players can result in a fierce price war (Jordan's ICT industry, 2014).   However, supporters of new entrant contend that it will result in enhanced telecom services and additional government revenue. Moreover, it will induce the current telecom organisations to adopt innovative techniques and offer a high value telecom service (Alrawabdeh, 2014). Currently, the market is saturated and mature; still, the data usage is low.

> *"The future is clear to everybody. People and businesses are connecting wirelessly, so we should facilitate this as much as possible."* – (Mohammad Al Taani, CEO and chairman TRC). (Jordan's ICT industry, 2014).

Despite an escalating increase in the telecom users in Jordan there has been a drop in the total revenue derived from the industry. Given the huge investments that telecommunication industries have put in to launch data services, minimal use by users is a critical problem since this lengthens the payback period of the telecoms company investment (The Jordan Times, 2014). Moreover, due to rapid changes in the Telecommunication industry, increasing competition and increasing acceptance of digital communication and services, Jordanian telecom organisations need to constantly improve their products, processes, and services to achieve a competitive advantage, remain relevant and maximise

their profits (Jayawardhana & Weerawardena, 2014). Numerous researches have shown the importance of gathering knowledge from multiple sources to improve organisational performance and enhance innovation (Sankowska, 2013; Tubigi and Alshawi, 2015). In Jordan, the main market competitors are Zain, Umniah, and Orange that is hosted by Zain and focuses solely on Jordanian's residing in Jordan. All these providers have already launched 3G networks which enable them to provide users with an even wider variety of services due to Internet accessibility. However, sources report that Jordanian telecom organisations are facing intense competition due to market saturation. To succeed in this highly competitive environment, these organisations are required to embed innovation into their organisational structure (Zaske, 2014). Hence, the study will be executed to highlight the challenges being faced by Jordanian telecom organisations and assess their perceptions towards embedded innovation for the accomplishment of business objectives in a highly-saturated market. The research problem of this study is also based on the knowledge gaps which are directed towards the fact that there are less theories which are related to the embedded innovation. However, this lack of theorisation has motivated the researcher to carry out the research in this field. Since the previous research does not take into consideration the trends and challenges of the telecommunication sector of Jordan, therefore, this research will fill the gap by contributing significantly to this research and positing a new dimension within the context of embedded innovation. As far as the corporate scenario is concerned, the telecommunication companies at Jordan lacks at strategizing innovative measures in their product and services which eventually results in the dissatisfaction level of the customers. The continuous innovation in the product and services offered to the customers can influence the satisfaction level, however, it is necessary to consider the trends which are the part of telecommunication industry globally. This will help the companies to address their issues of lacking innovation and receive greater attention of the customers.

1.4 Research Aim & Objective

This research aims to highlight the challenges being faced by Jordanian telecom organisations and assess their perceptions towards embedded innovation for the accomplishment of business objectives in a highly-saturated market. In doing so the researcher will explore the mechanism and processes to build a system for embedded innovation. The researcher will explore the challenges, benefits, and processes of embedded innovation in Jordanian multinational telecommunication organisations. The accomplishment of this research aim would require a thorough understanding of firm-level learning,

mechanisms of embeddedness and the boundaries of innovation systems in multinational telecoms that operate in developing countries.

Following research, objectives have been formulated to accomplish the aim of the underlying research study.

1) To explore the concept on systems of innovation at the firm level and innovation in a multinational context

2) To critically evaluate the theories of innovation systems, in the Jordanian telecommunication industry.

3) To examine the trends and challenges of embedded innovation within the case of telecommunication sector Jordan

4) To propose strategies for improving innovation measures at Jordanian Telecommunication Sector

1.5 Research Questions

This research will be executed to answer the following research question:

Main RQ: To what extent embedded innovation would improve the telecommunication services delivered in developing markets?

This broad research question has been divided into sub-research questions to facilitate the analysis process:

Sub-Q1: How do telecom professionals perceive embeddedness in service innovation in Jordan?

Sub-Q2: What are the motives, challenges, and processes of embedded innovation in the Jordanian telecoms market?

Sub-Q3: What are the strategies in which embedded innovation can be improved in Jordanian telecommunication sector?

1.6 Research Justification & Rationale

Like other communication industries at the global stage, Jordanian telecommunication organisations also seek modernisation, development and innovation that can elevate

organisations' position to the level of excellence and leadership. (Bose,2008). The organisations are being induced to adopt a proactive approach towards innovation due to various influential factors present in surrounding environment. However, achievement of leadership and excellence wouldn't be possible until organisations are highly effective, efficient, responsible and honest in fulfilling the corporate mission, accomplishing their strategic objectives, maximising the operational efficiency and integrating the innovation in core business activities (Zabadi, 2016). Additionally, the organisations are required to introduce different mechanisms for dissemination, expropriation and utilisation of information to assure the sustainability within this highly competitive and turbulent environment (Jayawardhana & Weerawardena, 2014).

In the next few subsections the research presents the research rationale *in relation to theory*, *the embedded innovation discipline*, as well as *the under-covered context of the Jordanian telecommunication*. The researcher tends to discuss the limitations of the current innovation models, thereby highlighting the need to adopt the concept of embedded innovation to assist the organisations operating in highly competitive markets. Through the findings of this research, suggestions would emerge for the organizations to make a shift from a dis-embedded approach to innovation embeddedness.

1.6.1 A shift from dis-embeddedness to the embeddedness

To handle the environmental complexities, the contemporary organisations are required to embed the innovation into different business processes to capitalise the existing business opportunities (Simanis and Hart, 2008). Successful application of advanced management techniques can assist the organisations in achieving their corporate and business objectives, and embedded innovation are the basic characteristics of an effective management systems (Bose, 2008). Embedded innovation is comparatively new terms that have recently emerged in the innovation and management literature. In the contemporary era, organisations' ability to survive and maintain high standards of competitiveness is grounded on its ability to gather, spread and utilise meaningful insights to develop its innovative capabilities (Jayawardhana & Weerawardena, 2014). Stating differently, the contemporary era suggests to embed the innovation into business processes and adopt an opportunity creation ideology instead of opportunity identification (Simanis and Hart, 2008).

However, the review of innovation literature provides an inadequate evidence to support the application of embedded innovation in organisational settings due to the newness of the concept. It has caused the modern organisations to integrate tested innovation strategies for dealing with the prevailing environmental complexities (Lawson-Lartego & Mathiassen, 2016). In this regard, the theories of open and inclusive innovation have been increasingly used to deal with the complex business challenges (Heeks, Foster & Nugroho, 2014).Today, the proactive management seeks to integrate the open innovation model, which allows the purposive inflow and outflow of knowledge for accelerating the internal innovation and expanding the markets for external innovation use (Ryzhkova & Bengtsson, 2013). Based on this model, the firms operating in highly competitive industries seek to generate the ideas from inside as well as the outside of the focal firm. The ideas collected from external and internal sources are combined into systems and architectures. This theory suggests the management to actively seek geniuses inside and outside the firm to provide the fuel for the business model (Patra and Krishna, 2015).

Futhermore, it is also important to note that enterprises integrating the open innovation model still face challenges in developing an efficient business model that can sustain in a highly complex market for long. Although, various telecom organisations have integrated the open innovation model, still the model is unable to resolve the core issues at hand. For instance, recently, the Orange (Jordanian telecom network operator) shared how the management is developing the innovative solutions by engaging with innovative eco-system. However, the Jordanian telecom sector is still facing a number of challenges that seek immediate consideration (Zabadi, 2016). The recent reports suggest that Jordanian telecom sector lacks the innovation, which can affect their survival in a highly competitive global telecom market. The analysis further suggests that Jordanian telecom sector lags the required innovation pace and despite its efforts to foster the innovation, the environmental complexities lessen the positive impact of innovation initiatives taken by organisations (Zabadi, 2016; Al-Zoubi, 2013).

This analysis suggests a review of the current innovation practices of the Jordanian telecom organisations and analyse if the increasing environmental complexity requires an innovation model beyond the open innovation. For this purpose, this research tends to explore the current organisational practices to foster the innovation. The research will also assess different innovation models and emerging innovation concepts to explore the innovation system practices of Jordanian telecommunication organisations.

As discussed earlier, the open innovation model is the latest development in the innovation literature. The model is tested in different settings to become a theory, but the review of innovation literature has highlighted various limitations of the open innovation model, which suggests a need to develop a new innovation-model that can cater the complex business needs in a highly turbulent scenario (Chesbrough, 2017). At organisational level, the integration of open innovation model causes the organisations to bear high process coordination and implementation costs. It is also reported that open innovation results into more errors in the routine work. The integration of open innovation model also results into heavy reliance on the external knowledge that results into a loss of knowledge control (Lazzarotti and Manzini, 2009). Grimaldi, Cricelli, Rogo & Iannarelli (2012) contend that open innovation results into loss of strategic power, creativity and flexibility. The intellectual property spill over also causes significant challenges.

The review of recent innovation literature suggests that innovation researchers have started recognising the need to introduce a new model. Recently, the innovation researchers have introduced some new innovation models that still require further testing in different contexts. These proposed concepts require further construction and testing in different settings to transform into a complete model. For example, to overcome the challenges associated with open innovation, the researchers have proposed the concept of open-inclusive innovation.The open-inclusive innovation helps the management to understand the relationship dynamics between intellectual, ethical, social and natural capital within the institutional context of innovation (Gupta et al., 2016). Another emerging concept is the embedded innovation that is based on the innovation from inside out. The embedded innovation is built over the open innovation and open-inclusive innovation concepts (Poirier, Staub-French & Forgues, 2015). The concept has grabbed the attention of various researchers as it adopts holistic view and proposes to embed the innovation in every business process for maximising the potential. However, this concept requires further refinement and testing to transform into a verified theory (Gupta et al., 2016).

The underlying research will apply the concept of embedded innovation besides deriving the theoretical support from open innovation and open -inclusive innovation. The rationale for choosing the embedded innovation is that ineffectiveness of dis-embedded innovation framework has become visible with time. In continuous efforts to serve the geographically dispersed mass markets and meet corporate growth objectives, the organisations' innovation strategies historically reflect the dis-embedded, production-driven

quality (Simanis and Hart, 2008). The dis-embedded innovation notion suggests the firms to view the communities as target markets and ecological system as natural resources providing the essential raw-material. Despite the tremendous advancements in the innovation theories, almost all models are based on the concept of dis-embeddedness (Milstein, London & Hart, 2007). Here is the framework of dis-embedded innovation:

Disembodied Innovation

Product and Service Design
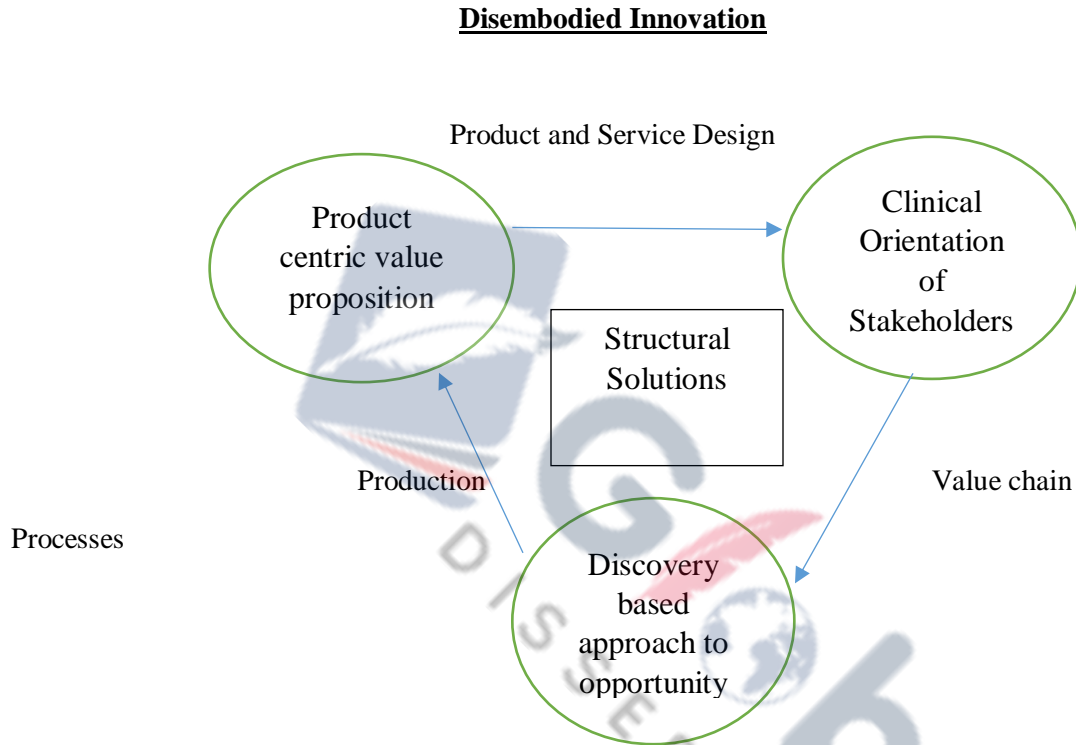
Source: (Simanis and Hart, 2008, p. 5).

The dis-embedded innovation provides limited insights to integrate the innovative practices and maximise the business potential. For example, Groves (2015) argued that this approach is only valid when there are clearly set industry benchmarks to evaluate the offered products/services. The dis-embedded model is built over the wrong assumption about the customers' needs. This model suggests that dis-embedded innovation practices can reinforce the customers' needs by searching out the data from field visits and confirming the pre-determined needs and viable business opportunities(Milstein, London & Hart, 2007). Usually, the data collection processes are ineffective, violating the base of pyramid that suggests to think beyond the market research phase (Simanis and Hart, 2008). The current open and inclusive innovation models though integrate the concept of inclusiveness, still the dis-embedded ideology persists to some extent that leads towards the formulation of sub-optimal

business models. This would consequently weaken the competitive positioning at marketplace. In most of the organisations, the lack of shared commitment and trust hinders the knowledge inflow and outflow (Dahlander & Gann, 2010).

The emerging embedded innovation concept urges to reverse the business practice and management thinking, which typify the traditional dis-embedded innovation strategies. For instance, in B2C, the embedded innovation proposes to view the C as community instead of customer. When viewed as a community, the locally-rooted relationship forms the primary value source instead of products or services(Milstein, London & Hart, 2007). Hence, if Jordanian telecom organisations adopt the embedded innovation practices, it will lead them to engage with the rich as well as poor communities in a spirit of mutual sharing and joint learning, which entails face-to-face, sustained interaction. Moreover, the firms will co-evolve the value by collaborating with the community. Embedded innovation model creatively marries the abilities of both partners, that is, firm and the community. There are three essential attributes of embedded innovation. They include long-term partnership orientation to all stakeholders, community centred value propositions and creation based opportunity approach (Boyer, 2003). It has been that one of the major reasons behind the lack of innovation in Jordanian telecom industry is the limited growth opportunities available in the market (Zabadi, 2016). The embedded innovation will guide the enterprises to create the opportunities by collaborating with the community instead of searching them in the highly competitive market. Here is the pictorial presentation of embedded innovation model:

Embedded Innovation
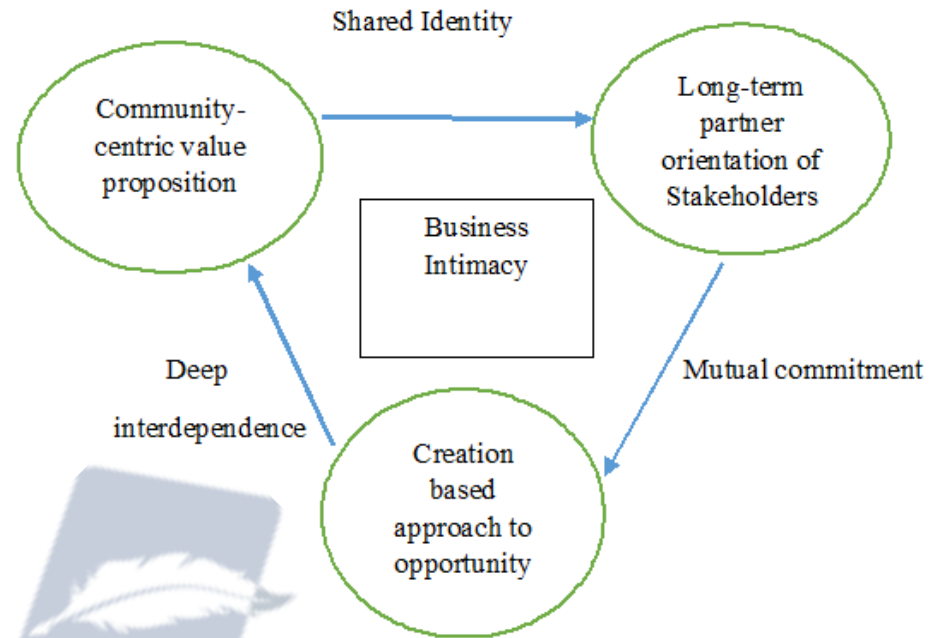
Source: (Simanis and Hart, 2008, p. 12).

From the foregoing, this research will derive the theoretical support from open innovation theory and open inclusive innovation model, and will attempt to explore how Jordanian telecom organisations can embed the innovation by collaborating with the stakeholders. The researcher will also analyse the challenges faced during embedding innovation and how the structural resistance could be minimised to enhance the performance.

Research Contribution

1.6.2   Theoretical Contribution

Previous discourses on innovation have not actually focused on exploring the dimensions of embedded innovation. The significance of this emperical evidence on embedded innovation lies on its commitment to go beyond the single issue of open innovation to fuller concerns of its conceptualization and theorisation.

The emerging concept of embedded innovation fills this gap and meets the complex needs of

turbulent environment, however, the innovation researchers have under-explored this concept despite its huge potential to address the contemporary business issues related to innovation. This concept requires rigorous exploration by the researchers to transform into a new theory in the innovation literature. This study will fill the literature gap, and will be a milestone in setting the basis for the new innovation paradigm, i-e innovation 3.0- embedded innovation. The information obtained from this current study may also aid production managers who lack information on new strategies.

1.6.3 Practical Contribution

This study will provide meaningful insights to the comprehension of the role of embedded innovation in enhancing service innovation in the telecom sector. The researcher will offer new insights by identifying different government (telecom policies and procedures, relevant regulations, tax rates, other incentives) and organisational aspects (including information technology, human capital, organisational structure, and organisational culture) that facilitate or hinder the integration of embedded innovation Jordanian telecom sector. The research will contribute to the existing body of knowledge by creating a linkage between embedded and service innovation based on empirical evidence. The research results will be highly meaningful for the management of selected telecom organisations for refining their innovation system practices by collaborating with the external environmental actors to gain meaningful insights. The strategic application of such market insights can transform it into business intelligence that defines, gathers, analyses and distributes the intelligence about competitors, customers and products/services. It can also be relevant in any other important environmental aspect with an aim to assist the management in their strategic decision-making process.

Moreover, findings will enhance the management's ability to exploit competitive positioning through embedded innovation. The researcher will fundamentally examine the challenges, benefits, processes and motives of telecommunication organisations for embedded innovation in the context of Jordan. In addition, it will determine the extent embedded innovation would improve the telecommunication services in the Jordan market. Overall, the research will fulfil its main motives to understand the concept of embedded

technology within the Jordanian telecommunication industry, expand the knowledge of embedded innovation and subsequently improve the telecommunication service in Jordan, and influence the policy makers and regulatory authorities in creating an innovation friendly environment in the telecommunication industry in Jordan.

Briefly summarising the research purpose and its theoretical and practical contribution, the underlying research will analyse the Jordanian telecom organisations' innovation practices to evaluate the fit between dis-embeddedness and embeddedness. The researcher will adopt a holistic approach and will collect data from three main entities, firm, community and government. "Firm" will include the Jordanian telecom management. The exploration of the managerial perceptions will suggest important insights to determine the extent to which firms' structure can embed the innovation, and what could be possible challenges. The overview of prevailing legislations will also determine the intensity legislative pressure that could be faced while adopting the embedded innovation practices. Finally, the viewpoints of "community" will determine whether the customers, suppliers and other business partners are willing to collaborate with each other to produce the shared value and create opportunities in a highly competitive market. It is clear from the discussion that each empirical research dimension will make a significant contribution in achieving research objective that is, enhancing the performance of Jordanian telecom industry by embedding innovation. Findings will also be useful to refine the embedded innovation concept that is still emerging, and requires rigorous testing before transforming into a tested and verified model. The results will help the researchers, analysts and policymakers to understand where the Jordanian telecom industry fits on the embeddedness continuum. The purpose will be to locate the current positioning and develop strategies to shift towards embeddedness.

1.6.4 Contribution of Objectives

The objectives which are proposed in the research will contribute significantly towards the existing research. Moreover, the first objective of the study is theoretical in nature which is

focused towards exploring the concept of embedded innovation within the global context and understand its significance. This objective will be achieved by referring to different theories and descriptions postulated by the authors previously for understanding the concept of embedded innovation. The second objective proposed will help in identifying the trends and challenges associated with the embedded innovation within the context of Jordanian Telecommunication Sector. In addition, the objective will help in proposing strategies for effective implementation of embedded innovation in the light of telecommunication sector of Jordan.

1.7 Scope of the study

Review of literature has revealed that Jordanian telecom sector has grabbed the attention of various researchers due to its rapid development during last few decades (e.g. Zabadi, 2016). Analysts are increasingly interested in exploring the factors promoting the rapid development of the industry. Hence, Jordan forms an ideal environment to carry out this research due to its rapidly growing telecommunication services in the Middle East. The country has grown in the statute to be named the hub of telecommunication services within the region. Furthermore, due to competitive nature of the Jordan telecommunication market, the concept of innovation is very invaluable. The effective integration of innovation into organisational structure ensures the survival of firms in a highly competitive and turbulent scenario (Jordan, 2014). Embedded innovation is a concept that not only assist the firms in building their brands but also benefits the customers in meeting their explicit and implicit needs. Embedded innovation in telecommunication services integrates both the organisation and the clients in attaining sustainability since it builds strong trusts and loyalty between both parties (Yassine, 2014). The research will focus on exploring the challenges benefits, processes and motives entailed in the concept of embedded innovation involving the three key players in the Jordanian telecommunication market. The research will further limit its concentration to the extent, which the embedded technology can improve telecommunication services within a rapidly developing market, using Jordan Telecom as a case study.

1.8 Research Approach

Research is a systematic way of gathering and analysing information, which is targeted at developing or contributing to generalizable knowledge. It is a process through which a particular subject can be studied elaborately for better understanding in order to make future predictions. However, the research approach for this study will adopt theoritical

assumption upon which this research is concentrated and the implication of this for the method adopted to acquire and examine research data.

The approaches that form the philosophical basis of research include qualitative and quantitative approaches. The quantitative is also called positivist approach while qualitative is a post-positivist approach. However, a clear divergency exists between the two approaches. Positivism deals with a clear quantitative approach to investigating phenomena and does not offer a required instrument for measuring human behaviours sufficiently. On the other hand, qualitative approach seeks to explore phenomena and its instruments use more flexible style in eliciting and categorizing responses to questions. It also adopts semi-structured methods such as indebt interviews, focus groups and participant observation. It involves analysing and interpreting texts and interviews in order to discover meaningful patterns descriptive of a particular phenomenon´´ (Auerbach & Silverstein, 2003).

Qualitative research analysis appears to be the suitable method for this research. This method could be used to gather in-depth data by discovering the meaning of the business problem and reconstructing the stories of participants on a conceptual level (Guba & Lincoln, 1994). The qualitative method is appropriate for this research because it will be able to interpret the nature of the context by answering the problem being explored (Yates and Leggett, 2016). This approach has several obvious strengths, firstly, because, it examines issues in details. Researchers conducting interviews are also not restricted. They have the advantage of asking any question in real time. As the research takes a new direction, the research framework can be revised to match existing new information. In order words, participant's response affects how and which questions the researcher asks next. In addition, the data collections and research questions are adjusted according to the knowledge obtained. Moreover, data from qualitative research has been found to be more compelling and powerful as opposed to quantitative data, which dwells more on numbers.

Qualitative research also has its limitations. The quality of the research depends entirely on the researcher. Cases exist where the researcher's personal ideologies and perspectives affect the quality of the discourse. Their presence in data gathering may also influence the subjects' responses. Qualitative data is often voluminous thus, it takes the time to analyse and interpret it.

However, the quantitative method is not the chosen method for the study because quantitative methods are used to correlate data between variables (Horsewood, 2011). For the purpose of this study, the quantitative method is not appropriate because researchers use a quantitative method to test hypotheses (Palinkas et al., 2015). Additionally, the mixed method also is not an ideal approach for this study. Mixed method approach enables researchers to juxtapose qualitative and quantitative techniques to explore the research question (Hay, 2016).

The current research has chosen the qualitative research approach and the research paradigm that complements the qualitative study nature is interpretivism. To examine the extent to which embedded innovation can improve the telecommunication services in Jordan market; the research will collect the qualitative insights from telecom organisations and the clients using the telecommunication services. Moreover, the researcher will also adopt multiple case-study approaches to conducting an organisation specific in-depth investigation of three telecom organisations selected for the research. An effective comparison and contrast of these organisations will determine their levels of adoption on embedded innovation and how this has influenced their service innovation. Semi-structured interviewing approach will be used to collect the data and rationale for choosing semi-structured approach is that it allows the researcher to use the probing technique while maintaining an overall structure. Interview will be conducted with senior management of each selected organisation. For this purpose, researcher plans to interview branch manager, chief operating officer and chief strategy and business development. The researcher has selected the purposive sampling technique to draw the required number of respondents. The thematic analysis will be conducted to analyse the qualitative insights.

1.9 Definition of Terms

Before turning to the discussion of the concept of Embedded Innovation, it is necessary first to define the terms, which will be used throughout this work and in relation to the purpose of this study. The most important of these terms are innovation, embedded innovation and dis-embedded innovation.

Innovation- The term innovation involves the application of imagination, information and initiative for deriving great values from the resources which mainly includes different ideas that are then converted into the useful products (Jacobsson & Bergek, 2011).

Embedded Innovation- The embedded innovation is explained as the paradigm which takes the approach towards how a company develops at creating sustainability. Moreover, the new concept is focused on integrating the company within the community perspective (Abu, 2014).

Dis-embedded Innovation- The dis-embedded innovation is associated with handling of environmental complexities, the contemporary organisations are required to embed the innovation into different business processes to exploit the existing business opportunities Finegan, 2000).

Chapter 2. Literature Review

2.1 Introduction

The innovations systems have always been used as frameworks to describe the variances in innovativeness between economies, industries and firms at international, national, regional and local levels (Gupta, Gupta & Jain, 2016). The innovation researchers argue that business enterprises heavily rely on the surrounding institutions for competitiveness and innovativeness. In local and regional innovation system, business enterprises systematically involve themselves in collaborative learning culture through an institutional milieu that is categorised by the embeddedness (Abu, 2014). Based on the governance infrastructure of these innovation systems, firms can develop a typology that comprises the grass-root system with the optimum level of local embeddedness, an integrated framework and a *dirigiste* system with the lowermost level of local embeddedness (Villarreal & Calvo, 2015). Review of literature highlights that much research has been done to explore the concept of embedded innovation, however, researchers have paid less attention to explore the motives, challenges and perceptions of embedded innovation (Danish et al., 2016).

The underlying study has identified this gap in innovation literature and will explore the motives, trends and challenges in integrating the embedded innovation in Jordanian telecom sector. The main reason for choosing the telecom sector to study embedded innovation is that the telecom sector has undergone major transformations due to changes in the macro-environment. The primary factors driving rapid innovation are; short service and product life cycles, advancing technology, fierce competition and changes in customer needs (Hajir et al., 2015). Hence, organisations are striving for uniqueness and originality they need to ensure their services and products are innovative so at to survive in the competitive environment. Modern telecom enterprises must engage all resources to foster the innovation and address the explicit and implicit customer needs (Danish et al., 2016).It requires an active interaction with the customers and other stakeholders. The researcher intends to highlight the challenges being faced by Jordanian telecom organisations and assess their perceptions towards embedded innovation for the accomplishment of business objectives in a highly-saturated market. Review of literature reveals that the previous researchers haven't explored the emerging concept of embedded innovation in the Jordanian telecom market. Recent reports on the Jordan's national innovation system also suggest that country is facing difficulties in embedding the innovation into its business environment. The underlying study will explore the perceptions of Jordanian telecom professionals about the emerging concept

of embedded innovation, analyse the challenges and motives behind embedding the innovation, and ways through which telecom professionals can improve the stakeholders' embeddedness in the service innovation deployed in the Jordanian market. This chapter will critically analyse the existing innovation literature, past empirical studies and innovation theories to extract important insights, identify a theoretical framework and set a theoretical foundation for the underlying research.

Accordingly, this chapter includes three sections as follows:

First section, introduces the key concepts of Innovation, the following section further describes and explains the various variables and terms in this study with reference to earlier scholars. This section contains an in-depth assessment of the concept of innovation, innovation systems and the application of embedded innovativeness.

2.1. What is Innovation?

"Innovation is widely considered as the lifeblood of corporate survival and growth". Zahra and Covin (1994, p. 183). The term innovation has been defined in the Oslo Manual (OECD, 2005) as

> *"... the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations."*

In other studies, innovation is defined as a process of enhancing business value and sustaining a competitive advantage (Hamel, 1998; Roberts 1998). Bessant et al (2005, p. 1366) extend this process towards renewing organisational processes and routines. "Innovation represents the core renewal process in any organisation. Unless it changes what it offers the world and the way in which it creates and delivers those offerings it risks its survival and growth prospects". Organisations have always looked for improved ways of business to keep themselves highly competitive and sustainable in the market. As a result,

they continually create knowledge with a view to differentiating from and gain an advantage over their competitors which may be termed 'innovation'.Innovation gives companies a competitive advantage by increasing and sustaining high performance, and attracting new customers and retaining the existing ones (Cooper, 1998; Gopalakrishnan & Damanpour, 1997).

According to reports, successful companies produce 75% of their revenues from new products or services that did not exist five years ago (Smith, 2006). Innovation is the most fundamental activity for every company that aims for survival and long-term competitiveness (Hamel 1998, Roberts 1998). Schumpeter (1930) defines innovation as*"the introduction of new goods, new methods of production, the opening of new markets, the conquest of new sources of supply and new organizational structure of any industry"*. This definition addresses five aspects of innovation. These aspects include a) product (either new to consumers or with improved quality for those that were already available), b) process (methods of production either new to the world or new to the industry), c) new market, d) new sources of supply, and e) new forms of competition. This definition, although comprehensive, fails to address service as an aspect (Goffin and Mitchell 2010). One of the reasons might be the economic situation of that period when more focus was on manufacturing. However, the telecommunication service sector started to emerge in the last 30 years and there has been a substantial shift from manufacturing to the service sector.

AH Van de ven et al. (1999, p. 13) in their definition of innovation addresses service and defines innovation as "the development and implementation of new ideas and knowledge into a socially and economically successful product, process or service innovation". Considering the importance of the telecommunication service sector in the current economy, this definition is more appropriate compared to the above-mentioned definitions and addresses the main aspects of innovation that are significant in firms' survival. Innovation is a process in

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which valuable ideas are transformed into new forms of benefit for the organization, customers, employees and stakeholders. In developing countries, innovation tends to happen "behind the technology frontier" which is transmitted from developed countries (Hobday, 2005). Batiz-Lazo and Woldesenbet (2006) stated that ATMs (Automatic Teller Machines) were used in US and UK banks in the 1970s, while the majority of Jordanian banks started to use this technology in the last decade. Therefore, innovation is something new, but not always in absolute terms. It can be only defined in context with a clear insight of its inputs and outputs, which is explained further as the so called "Innovation Systems".

2.2. Innovation Systems

The simplest definition of systems is found in the Oxford English Dictionary as "*a set of things working together as parts of a mechanism or an interconnecting network; a complex whole*" (Oxford University Press, 1989).A system can be defined a set of interrelated components that follow an observable attribute. A system may be defined as "*a set or arrangement of things so related or connected as to form a unity or organic whole*" (Webster's Collegiate Dictionary). Systems engineers define a system as a set of interrelated components working toward a common objective. Innovation systems (IS) can be defined as actors or entities such as firms, other organisations, and institutions that interact in the generation, use and diffusion of new and economically useful- knowledge in the production process (Edquist 1997). IS is a concept introduced by (Freeman C., 1987). Freeman defines SI as "*the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify, and diffuse new technologies."* (Freeman C., 1987). Systems are made up of components, relationships, and attributes.Components are the operating parts of a system. They can be of a variety of types: actors or organizations such as individuals, business firms, banks, universities, research institutes, and public policy agencies (or parts or groups of each). They also can be physical or technological artefacts. They can also be institutions in the form of legislative artefacts such as regulatory laws, traditions, and social norms (Carlsson et al, 2002).   The function of an innovation system is to generate, diffuse, and utilize technology. The properties and behaviour of each component of the set influence the

properties and behaviour of the set as a whole. At the same time, each component depends upon the properties and behaviour of at least one other component in the set. Because of this interdependence, the components cannot be divided into independent subsets; the system is more than the sum of its parts (Blanchard and Fabrycky, 1990, p. 2). The question raised here is, for instance - what if a component is removed from a system or its characteristics changed? The other artefacts in the system will alter characteristics accordingly (Hughes, 1987, p. 51), and the relationships among them may also change - provided that the system is robust.

Relationships involve market as well as non-market links. Feedback (interaction) is what makes systems dynamic; without such feedback, the system is static. Put differently, the greater the interaction among the components of a system, the more dynamic it is. However, even a highly dynamic system may not be able to survive unless it evolves in the right direction. There are different definitions of what an innovation system is, what it comprises, and that is the reason why this research posits that the innovation system lacks learning, human actor. That is to say, the innovation system is incomplete and it should include learning, engagement, collaboration with customers, humans, the surrounding environment etc.

For instance, Nelson gives the following definition of innovation system: "a set of institutional factors that, together, plays the major role in influencing innovative performance."(Nelson, 1993, p. 4). Carlsson et al., on the other hand, develop the concept of a technological system of innovation but give a previous account of the state of the art of innovation systems. They suggest that for analytical purposes, it is "possible, at least in principle, to view a national system of innovation as the aggregate of a set of technological, sectoral or regional systems" (Carlsson et al., 2002, p. 236). Niosi et.al. Present what they call a 'workable concept' of a national system of innovation and define it as: "the system of interacting private and public firms (either large or small), universities, and government agencies aiming at the production of science and technology within national borders. Interactions among these units may be technical, commercial, legal, social, and financial, inasmuch as the goal of the interaction is development, protection, financing, or regulation of new science and technology" (Niosi, Saviotti, Bellon, & Crow, 1993, p. 212).

What remains certain in the idea of the SI approach is the systemic nature of innovation where private, public and academic actors forge complex relationships to trigger technical changes to enhance business competitiveness at the national level. However, no scholar has

defined innovation as a system, rather they defined innovation as the tool, a competitive advantage, idea, practice, or material artifact perceived to be new by the relevant adoption firm Zaltman et al (1973).

2.2.3. Service innovation

Schumpeter developed the theory of innovation and defined it as "the setting up of a new production function", that "covers the case of a new commodity, as well as those of a new form of organization such as a merger, of the opening up of new markets, and so on" (Schumpeter, 1939, p.84). Because of this broad meaning of innovation as introduced by Schumpeter, too often the innovation literature has taken more limited views by focusing on technological innovations. In the case of services, particularly due to the considerable role of customer interaction and the intangibility characteristic, a bias towards technological innovations is even more inadequate. A service innovation is a new service experience or service solution that consists of one or several of the following dimensions: new service concept, new customer interaction, new value system/business partners, new revenue model, new organizational or technological service delivery system.

The first dimension is the service concept, also named the service offering (Frei, 2008). The service concept or offering describes the value that is created by the service provider in collaboration with the customer. Service innovations are seldom born in a firm lab as a result of an isolated research activity (Sundbo and Gallouj, 2000; den Hertog et al., 2006). On the contrary, most service innovations are an answer to a perceived unmet need of actual or potential customers or translating a technological option into a service proposition DEN HERTOG (2000) and DE JONG et al. (2010). For example, service innovation is best described as a process of collective problem-solving in which learning within organizations and connection between organization play a key role. LOVE and MANSURY (2007) for

example, suggested that firms' external linkages, particularly with customers, could significantly enhance service innovation performance. In this research, the definition of service innovation was adopted from LEIPONEN (2005) and defines service innovation as the completely new services most often introduced by firms that engage in external knowledge sourcing, particularly from customers and competitors.

2.2 The current status of telecom sector

This section explains different factors, including technological and economic changes that shaped the telecoms industry during the last decade. In doing so, why address these changes at the global, Macro, and Meso levels It also discusses of this sector that the recent facts based on current theoretical and empiricalstudies to prove the accelerating changes and competitiveness in this sector.

2.2.1 Telecoms at the international level

The global telecommunication market has experienced a continuous growth due to interconnected economy and digital sharing during last few decades. The technological advancements and ongoing innovations are mainly driving the ongoing transformations (Thamarapani, 2016). However, various telecom markets are struggling hard to keep the pace with changes as the convergence witnessed in last two decades is mainly driven by disruption instead of well-thought and well-planned strategies (Ojanpera et al., 2017). The current reports suggest that the intensifying competition has made the growth stagnant in various regions and profitability can only be earned by adopting innovation techniques to cut the cost and maximise the value of the offered services (Thamarapani, 2016). Although, the technological advancement is assisting organisations in integrating innovative business practices, still the organisations are facing difficulty in dealing with multifaceted challenges that require to embed innovation in each business process (Danish et al., 2016). The growing contribution of the telecom sector in global and regional economic development makes this industry an interesting case-study while exploring the effectiveness of innovation embeddedness. Here is the graphical presentation of revenue earned by global telecom

market during last few decades. The analysts have forecasted the revenue growth during next two years also based on previous trend:

Table 1: Revenues analysis of mobile telecoms (2005-2019)
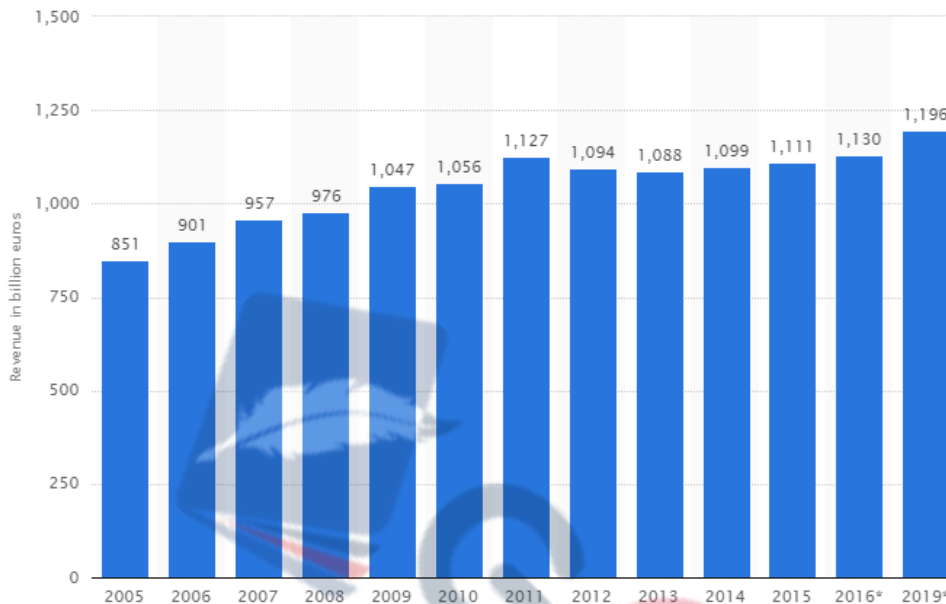
Source: .

The graph shows that the global telecom industry has experienced a profitability growth from 851 (billion euros) in 2005 to 1,196 (billion euros) in 2019 (expected). However, compared to the profitability, the mobile subscriptions have experienced more tremendous growth. In 2011, the mobile subscriptions were around 5.86 billion (around 62.9 percent of whole world population), whereas, the percentage is expected to reach 67 percent in 2019 (Statista, 2017). The slower profitability growth compared to the subscription rate suggests need to embed the innovation that can increase the business model effectiveness, resulting into a shared value for business as well as community.

2.2.2 Telecoms at the Macro and Meso

The Jordanian telecom sector is considered as one of the highly competitive telecom markets (Qawasmeh & Bataineh, 2010). However, it has been reported that Jordanian telecom sector lacks innovation as Jordanian telecom organisations mainly offer basic telecom services like airtime calls, messaging, airtime balance transfer and internet allowance unlike the Western telecom organisations that offer highly advanced services to their customers (Hajir et al., 2015). Currently, the sector is changing radically due to the

combination of globalisation, market forces, and innovative technologies. Jordanian telecom sector plays a significant role in the national economic development (Qawasmeh & Bataineh, 2010). However, results of some empirical studies suggest that industry is currently facing challenges related to the innovation and knowledge management (Hajir et al., 2015). Hence, the results of underlying research will be helpful in assisting the Jordanian telecom organisations in embedding the innovation into existing business model as a tool to wine such a competitive market and sustain.

2.3   Innovation in telecom sector

The business environment of global telecom sector is characterised by the challenging tasks and high competition. Telecom enterprises need to foster innovation in the form of solutions, processes, services and products to ensure their long-term survival in a highly turbulent scenario (Danish et al., 2016). A strong collaboration between different organisational units and external stakeholders is required to integrate a pro-innovation culture. An active interaction with the internal and external factors influencing the firm innovation can serve as the main engine for the innovation development (Gupta, Gupta & Jain, 2016). Innovation literature highlights the need to align with R&D with other departments as R&D managers face difficulty in integrating the innovation and managing innovation projects that are surrounded by risk, uncertainty and complexity (Parveen, Senin & Umar, 2015). In such a complex and competitive environment, an effectively diffused, integrated and embedded innovation can strengthen the competitive position of telecom organisations operating at local, regional, national or international level. The innovation system involves the creation, diffusion and use of knowledge to get and sustain and distinctive competitive edge over rivals (Abu, 2014).

2.2.1 Innovation drivers in global telecom industry

Various drivers are inducing the telecom organisations to embed innovation into their organisational structure. Based on the Goffin and Mitchell (2010) findings, the first driver towards innovation is the technological advancement that includes the usage of existing technologies in new applications as well as using new technologies in services and products. Companies are required to respond to the technological advances quickly to be able to employ them in their products/services and stay ahead of their competitors. This proactive

approach will enhance the organisational ability to identify and exploiting the new opportunity in the market (Habibi et. al., 2016).

The second driver that induces the telecom organisations to embed innovation in their business practices is changing demographics, attitudes and needs of customers. For example, markets with older populations have different requirements than those dealing with younger populations (Olla and Patel, 2002). The third driver is intensified competition which is particularly challenging in Jordan where the telecommunications sector is dominated by three mobile phone providers. Despite the monopoly, Jordan has steadily increased competition due to its regional superiority in communications development, low start-up costs and business-friendly environment attracting considerable investment in its ICT industry from Microsoft, Dell, IBM and France telecom (Export.gov 2016). The fourth driver is the turbulent business environment. The shift in the mobile telecommunication industry and transformations have changed the business rules. The major challenges faced by telecommunication providers are the shifts from one simple voice service to a portfolio of mainly convergent data services (e.g. integration of voice, data, and Internet), from no or a few affiliations to multiple partnerships (Olla and Patel, 2002), from simple and linear links in the form of value chain to complex relationships in the form of value network (Peppard and Rylander, 2006), from homogeneous to heterogeneous customer demands, and from customers consuming modest services to customers continuously presuming advanced, high qualities services.

2.3.2   The Quadruple Helix Model and Open Innovation

Open innovation denotes the organisations' ability to make optimal use of external technologies and ideas to improve business performance and get a sustainable competitive advantage while letting the external organisations capitaliseon their unused innovative ideas (Villarreal & Calvo, 2015). In thetelecom sector, open innovation enables the organisations to shorten the product lead time, de-risk the business model and inculcate innovation at a substantially low cost. The Quadruple Helix Model reflects different features of emerging innovation paradigm (Leydesdorff & Ivanova, 2016). The innovation policies in the telecom sector have confronted intense environmental pressure because of internal policy issues and external developments (Abu, 2014).

Response from the telecom organisations to these challenges includes abehavioural and structural renewal in innovation strategies having regional and local consequences

(Danish et al., 2016).Parveen, Senin & Umar (2015) investigated the factors affecting the quadruple helix open innovation model in thetelecom sector. The researchers also analysed the employees' organisational commitment as moderating variable while investigating the open innovation. The study confirmed a significant influence of organisational culture on the telecom organisations' open innovation practices. Researchers further proposed that the integration of open innovation in the telecom sector depends on the commitment of organisation, industry, society and government. It implies that the successful integration of innovation relies on the multi-actor organisational learning (Parveen, Senin & Umar, 2015).

2.3.3 Knowledge management Perspective

Various empirical studies on telecom sector confirm that organisation's ability to learn from the multiple actors and extract important knowledge from them act as alever for open innovation (Schaarschmidt & Kilian, 2014). This lever connects the people and technology by interconnecting various organisations and innovation eco-system (Hafkesbrink & Schroll, 2010). Such interconnectedness highlights the importance of organisational learning (Hafkesbrink, Hoppe &Schlichter, 2010).Open innovation starts with the organisation's learning of radical and incremental innovation. During the opening-up process, the organisation depends on the prevailing macro-environmental structure that determines the self-organisation capabilities and borderline for the organisation, the ruling culture, reputation, open-mindedness, knowledge friendliness and mutual trust (Berkhout & Van Der Duin, 2007).

Hajir et al (2015) assessed the role of knowledge management in integrating the innovation in Jordanian telecom industry. Based on empirical research, the researchers proposed that effective knowledge management practices have a statistically significant impact on the firm's innovation practices. The study explored different dimensions of knowledge management including physical environment, information technology, human resource, organisational structure and organisational culture (Hajir et al, 2015) the empirical findings further revealed that information technology dimension had the strongest impact on the innovation integration. It implies that Jordanian telecom firms can integrate the innovation by improving the knowledge management infrastructure and should invest heavily in the information technology. It will increase their ability to sustain a distinctive competitive advantage based on innovative organisational practices.

2.3.4 Organisational ambidexterity, trust and innovation

Innovation literature has extensively discussed a shift from close to open innovation in different contexts. However, less attention has been paid to analyse the trust element in such innovation culture (Andriopoulos & Lewis, 2009). Probst, Raisch, and Tushman (2011) discussed the basic characteristics of the organisations' ambidextrous thinking and regarded the trust as an essential element for building healthy, professional relationships with stakeholders. An autonomous teamwork signifies the framework that operates under a trust-based, open friendly environment and nurtures effective and constructive relationships (Raisch & Birkinshaw, 2008). Such trustworthy, creative and participatory style creates a cohesion among different organisational actors, consequently creating a sense of commitment and belonging. Organisational ambidexterity relates to the dynamic associations leading towards mutual exploitation and exploration of knowledge to set the basis for an innovative organisational culture (Ferrary, 2011). These interconnected associations are construed in a cooperative attitude integrating current and new knowledge into innovative process, service and product development. Salampasis, Mention & Torkkeli (2014) argued that role of trust in the propensity and openness to innovation is inevitable. It breaks the barriers within the organisation and facilitates the knowledge transfer through informal and formal communication channels. The creative communication with the internal and external organisational partners result into theestablishment of a collaborative culture, which is a step towards embedded innovation (Salampasis, Mention & Torkkeli, 2014).

The next section will critically analyse the previous firm innovation models to identify the limitations and suggestions made by past studies to improve inclusive innovation.

2.4 Critical evaluation of previous models in embedded innovation:

Review of literature reveals various studies that proposed innovation models to support the firm innovation and enhance their competitive position in a highly turbulent market (e.g. Phelps, 2010). For example, Seddighi (2015) assessed how firms operating in contemporary knowledge-based economies use the knowledge as competitive tool and an essential input to foster the innovation (Seddighi, 2015). In contemporary knowledge-based economies, the growth of firm relies on its ability to accumulate the knowledge through effective communication and collaboration with the stakeholders and integrating the technical change that consequently results into highly innovative activities (Hogan et al., 2011). The ability to foster the innovation on continuous basis has become a must for survival of firms operating in competitive markets (Phelps, 2010). The concept of embedded innovation also emerges

from this need of firm innovation. Continuous refinement and development of firms' core competencies play highly critical role in transforming the organisation into an innovative firm (Simanis & Hart, 2008).

While exploring the need to integrate the innovation for sustained success, Seddighi (2015) developed a conceptual framework for firm innovation. The researchers empirically evaluated and tested the model by collecting data from 128 firms. The study was executed in the North-East England. Based on empirical results, the researchers concluded that mostly the innovative firms spend heavy expenditure on the research and development activities (Seddighi, 2015). The conceptual model highlighted different factors affecting the firm innovation, including development and refinement of core competencies through informal and formal cooperative research and development activities within an incubator research and development cluster. The researchers based their model on the resource based view theory (Seddighi, 2015).

It implies that firms must develop close ties with the external environmental actors to support their research and development activities and inadequate communication with external stakeholders cannot facilitate the innovation integrate within firm R&D (Ayuso et al., 2011). The literature also suggests the need to form the knowledge clusters to improve firm innovation. Today, knowledge is acting as an important innovative input for productivity growth (Dasgupta & Gupta, 2009). Firms operating in isolation find it difficult to extract meaningful knowledge that can support the research and development activities (Child and Faulkener 1998). Cooperation among stakeholders and clustered firms results into high return through open sharing of knowledge and resources such as research and development activities, specialised labour and technology (Hill and Brennan 2000; Schmitz 2000; Ayuso et al., 2011).

Despite numerous models proposed by the innovation researchers and massive investment on research and development activities, innovation remains a challenging issue for various organisations and Jordanian telecom industry is one of them . The firms lack innovative practices, and frequently fail while integrating and promoting an innovative culture. Those who succeed, strive hard for sustenance (Ayyagari, Demirgüç-Kunt & Maksimovic, 2011). It indicates a need to shift to a new paradigm that can guide business organisations' innovation activities by adopting a holistic view. Pisano (2015) cites the inadequate innovation strategies as main reason behind failed or less successful execution.

2.4.1   A brief historical overview of firm innovation models

The innovation literature is filled with the firm innovation models since the 1950s. The proliferation of innovation models suggests that each model purports to guide or explain the innovation process within industrial firms (Hobday, 2005). In this regard, the current research found a seminal study conducted by Rothwell. The researcher argues that the post-war era is defined by a series of technological innovation that occurred with the evolution of corporate innovation strategies (Rothwell, 1994). It is important to note that the evolution to the next innovation model didn't occur by simply replacing or substituting the previous model. In most cases, models existed at the same time, while in other cases, components of two innovation models were mixed to introduce a third model that can better meet the innovation needs of corporate firms (Brem & Voigt, 2009). Rothwell (1992) contends that these innovation models were the simplified presentations of the complex organisational processes. The development from one innovation model to the other is the reflection of transformations in the central perceptions of what defines the best business practices instead of the actual development (Brem & Voigt, 2009). Rothwell (1994) argues that the model appropriateness reflects into its ability to vary from industry to industry and among various innovation categories (such as incremental or radical). Researchers further argue that the organisational processes occurring within the organisations rely on the exogenous factors like speed of the technological development, prevailing competition and support from government and other legislative institutions (İzadi, Zarrabi & Zarrabi, 2013).

The earlier firm innovation models in 1950s were basically simple linear models as regarded the innovation as a sequential process rather than a complex process involving multiple relationships (Brem & Voigt, 2009). In 1960s and 70s, the demand pull firm innovation models appeared on screen that resulted into development of various market led innovation theories. However, the major limitation of these models was their linear approach towards innovation integration like their predecessors (Mowery & Rosenberg, 1979). The demand-pull innovation models focused on the market research in identifying the viable opportunity and incurring the research and development expenditure to satisfy the identified need (Rothwell, 1994). The management's approach was short-sighted as they considered the marketplace as key source for ideas worthy of research and development but didn't focus on developing meaningful relationships with all stakeholders to establish a strong basis for innovation (Rothwell, 1992).

Later in 1970s, the demand-pull innovation models were succeeded by the interactive models. Now, management slowly started recognising the need to develop and strengthen the interactions with important environmental actors (Moulaert & Sekia, 2003). The results of empirical researches of that time proposed that the market pull and technology push linear innovation models were atypical and extreme cases of industrial innovation (Lundvall, 1988). However, the new interactive innovation models also adopted a myopic view as per Rosenberg and Mowery. The researchers contend that these firm innovation models were characterised by the interaction between technology and marketplace. The models lacked the focus on building meaningful relationships with stakeholders and society (Mowery & Rosenberg, 1979). Rothwell regards these models as linear, though they claimed to be non-sequential and non-linear (Rothwell, 1994). In 1980 decade, the innovation researchers proposed the integrated innovation models that still lacked the non-linear characteristic despite non-sequential processes along with feedback loops (Moulaert & Sekia, 2003).

The post 1990 innovation models were the initiation of truly non-linear innovation approach. The networking and system integration models focused on the knowledge management and building relationships and networks to facilitate the firm learning process (Hobday, 2005). The management started realising the importance of developing close ties within and outside the firm to develop and sustain the competitive advantage (Rothwell, 1994). These models suggested that the innovation was fundamentally and generally a disseminated networking process (Moulaert & Sekia, 2003). Researchers suggest that these integrated networking innovation models were formulated based on the critical observations (during the decades of 1980s-1990) of an upsurge in partnerships, corporate alliances, research and development consortia and various types of joint ventures (Brem & Voigt, 2009). These observations resulted into meaningful extensions to the previous generation integrated innovation models, and focused on developing the vertical relationships, such as making strategic alliance with the customers and supplies, and making effective collaborations with the key competitors (İzadi, Zarrabi & Zarrabi, 2013). Rothwell argues that these extensions to the previous linear innovation models were made due to the time pressure for increasing the efficiency and speed to successfully launch new products to satisfy the ever-changing customer needs (Rothwell, 1994). The environmental turbulence further pressurised the management to enhance the efficiency of overall innovation network, including external collaborations, customers, suppliers and in-house functions (İzadi, Zarrabi & Zarrabi, 2013).

2.4.2 Inclusive innovation

Inclusive innovation is a socially focused innovation type that enables people from the lower social class to access quality products and services (Henkel, 2006). Many countries are encouraging service and product providers to utilise inclusive innovation to reach the entirety of their population and promote equity (Altenburg & Lundvall, 2009). The concept of inclusive innovation is getting popular in the global telecom sector due to increased competition. However, inclusive innovation requires good planning, otherwise, companies may end up shutting down that part of business due to lack of enough sales to sustain the continued growth (Goyal, 2016). One of the main disadvantages of inclusive innovation is the need for high sales to sustain production (Henkel, 2006). Inclusive innovation feeds inconsistency, which is detrimental to a business venture. It consequently slows down decision-making practices in a firm due to the increased number of people involved (Altenburg & Lundvall, 2009). There are some common pitfalls to be avoided to increase the chances of success of inclusive innovation, including lack of support from the top management, focus on the wrong performance metrics, failure to hire talented executives, apartnership with the wrong organisations and using old models of business (Henkel, 2006).

2.4.3 Innovation diffusion

The theory of DOI is useful in describing the adoption of a certain technology. Diffusion happens when opinions and information about a new technology are spread to potential users through various communication channels (Henkel, 2006). Rogers highlighted some factors that prevent the successful adoption of a new technology, including ineffective or poor communication channels and personal limitations of a potential client (Rogers, 2010). Diffusion theory doesn't enable corporations to predict the extent to which an innovation is likely to be adopted which could lead to massive losses for the firm in case of over production. Another disadvantage of diffusion theory is its lack of catering to the flow from the customer (Sahney, 2015). Unlike open innovation, diffusion theories encourage the flow of the message from the receiver. This means that it does not consider user feedback. It instead focuses on persuading a user to adopt the product (Islam & Meade, 2015).

2.5 Service innovation in the telecom sector

Service innovation involves a unique service experience that consists of different dimensions such as a new customer interaction, a new service concept, a new business partner, an innovative business system, new technological or organisational service delivery system or a new revenue model (Skålén et al., 2015). Service innovation is best described as

a process of collective problem-solving in which learning within organisations and connection between organisation play a key role. Love and Mansury (2007) suggested that firms' external linkages, particularly with customers, can significantly enhance service innovation performance. This research adopted the definition of service innovation from Leiponen (2005) and defines service innovation as the completely new services most often introduced by firms that engage in external knowledge sourcing, particularly from customers and competitors.

Various studies have analysed the management practices of service innovation within the telecom sector. For example, Rahman et al (2015) proposed a framework and empirically validated the successful service innovation practices in telecom sector of developing regions. The proposed framework highlighted the significance of relationships between cross-functional communication, technological tools' implementation, overall innovation process, organisational culture, competitive pricing and performance. The empirical research results proposed that organisational culture and implementation of technological tools have a significant influence on the innovation process, cross-functional organisation and competition informed pricing. The researchers stressed the need to conduct further research for assessing the innovation management practices within the telecom sector of developing countries (Rahman et al, 2015).

This study has chosen the Jordanian telecom sector to analyse how embedded innovation enhances the overall service innovation in selected telecom industry. Firstly, the research will critically analyse the embedded innovation literature to identify and discuss a comprehensive framework. Later, empirical research will be executed based on this framework in thecontext of Jordanian telecom industry.

2.6 Embedded innovation in telecom industry

In thecontemporary era, the world has transformed from the innovation 2.0 (open innovation) to the innovation 3.0 (embedded innovation) to deal the environmental complexities (Simanis & Hart, 2009). The emerging embedded innovation paradigm has not been thoroughly discussed in the innovation literature in thecontext of thetelecom sector. This paradigm adopts a new approach to understand how modern business enterprises integrate the sustainability (Baldwin & Von Hippel, 2011). The embedded paradigm stresses the need to integrate the whole community while fostering the innovation. This unique perspective

allows the organisations to get a distinct competitive advantage by developing the trust and long-term relationships with the customers (Ferrary, 2011).

The Embedded Innovation Paradigm
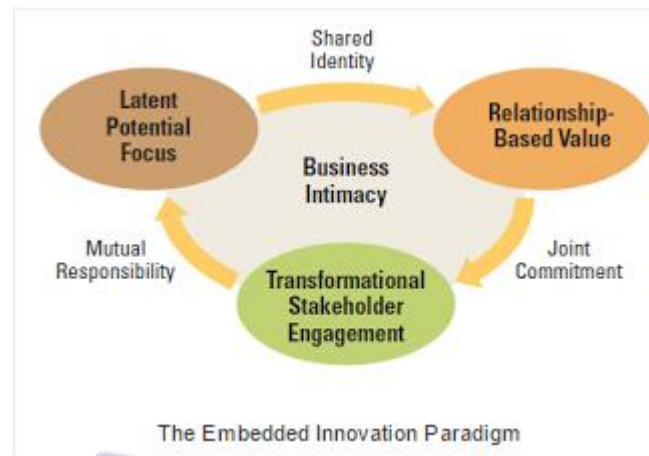
The above model shows how an organisation creates the relationship based value through shared identity and ensures a transformational stakeholder engagement through joint commitment (Ferrary, 2011). The business organisation develops a sense of mutual responsibility and focuses on the latent needs of the customers through effective communication (Baldwin & Von Hippel, 2011). The embedded innovation paradigm suggests that current diversified economies have a potential that must be explored to capitalise the opportunity. It suggests to build the close ties with the local community and build the customer loyalty based on mutual trust (Ferrary, 2011).It is amost important process for building customer loyalty at initial stage will guarantee the success of new product or service that has been designed to meet the latent customer needs (Simanis & Hart, 2009). The model suggests the business develop and maintain a healthy relationship with thecommunity. The model presents a strategically wise give and takes relationship with the customers and local community (Baldwin & Von Hippel, 2011).

Here is the traditional structural innovation paradigm:

The Structural Innovation Paradigm
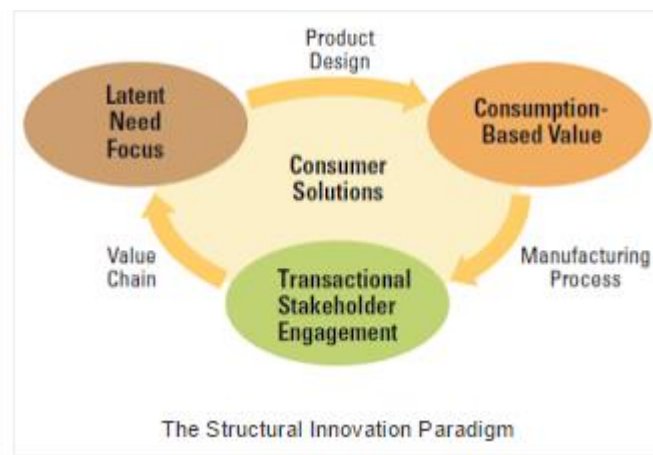
Instead of business intimacy, here the core focus of the firm is to provide the consumer solutions. The model is based on a transactional rather than transformational stakeholder engagement, where, the firm generates the consumption based value through innovative product design (Baldwin & Von Hippel, 2011). This model doesn't ensure the business sustainability in the long-run due to lack of interaction with the community (Simanis & Hart, 2009).

2.6.1 Recent trends in embedded innovation

Simanis & Hart (2009) contended that various industries such as military weapons, biotechnology, pharmaceuticals, semiconductors, disk drives, computers and telecommunication equipment are transforming from close to open innovation system. However, Anderson & Billou (2007) argued that the transformation from close to open ended innovation has complete and proactive organisations operating in highly competitive industries are heading towards embedded innovation system. These businesses are seeking the innovative knowledge from unlikely sources, and are making a strategic use of this knowledge to sustain a distinct competitive advantage (Simanis & Hart, 2009). In these organisations, the innovation locus has shifted outwards the centre of research and development department and has diffused into the web of interconnections that link these organisations to the outer world (Pitta, Guesalaga & Marshall, 2008).

Embedded innovation takes on a different approach to organisational development focused on creating sustainability (Doloreux, 2002). Embedded innovation aims at integrating an organisation with the society of the targeted population. Integration into the community enables an organisation to achieve a competitive advantage since it builds trust with the client that is key to the development of a long-term relationship and loyalty to the company (Pitta, Guesalaga & Marshall, 2008). The structural innovation model is the much older model that

has been employed prior to the development of embedded innovation. Hence the two share some similarities that are essential to the understanding of the application of embedded innovation. The structural innovation model is guided by latent need. This means that it is market driven and focuses on the development of products that satisfy consumer needs. This model is very efficient in environments where the driving factor is consumption. However, the structural innovation model fails when it comes to the developing market or in traditional markets (Simanis & Hart, 2009).

2.6.2 Challenges influencing the embedded innovation

The embedded innovation is a new term that has recently emerged in the innovation literature. The innovation researchers have not adequately explored the hurdles and challenges faced by the management in fostering an embedded innovation culture in their organisations (Noordhoff et al., 2011). This is the prime reason for conducting this research to fill the gap and make a substantial contribution to the existing innovation literature (Hassink, 2001). Review of literature has highlighted some studies that highlighted factors affecting the firms' efforts to collaborate with the community (Boyer, 2003). The main challenge in embedding the innovation is building a common understanding that mostly doesn't exist at an initial stage. However, a persistent effort to collaborate and facilitate the knowledge flow results into gradual evolution of mutual trust and shared understanding (Edquist, 2010).

Researchers also contend that existing organisational structure hinders the innovation embedding process as strict hierarchy and inflexible structure strongly resists the collaboration with the external stakeholders through formal and informal communication channels (Simanis & Hart, 2008). Hence, a strong alignment between the organisational structure and innovation culture is a prerequisite for the embedded innovation (Noordhoff et al., 2011). Leal-Rodríguez et al., (2014) argued that the resistance from the inner organisational forces is stronger than the external environment while integrating innovation and creativity within a traditional organisation. It implies that before heading towards an embedded innovation culture, a firm should create an awareness among employees to minimise the internal resistance (Edquist, 2010).Insufficient research has been done by the previous researchers in the context of the telecom sector. The underlying research will empirically analyse the challenges faced by Jordanian telecom sector in embedding the innovation and enhancing overall performance.

2.7 Factors affecting the firm innovation

Telecom industry's highly competitive environment seeks an innovative culture to strengthen the competitive positioning atnational and international stage (Abu, 2014). Various factors affect the shift towards an embedded innovation culture, including the organisational structure, customers, banks and financial institutions, research expenditure and public policy agencies (Getz et al., 2016). The innovation system also comprises technological or physical artefact, or institutions in the form of legislative artefacts such as regulatory laws, traditions, and social norms (Carlssona 2002). The function of an innovation system is to generate, diffuse, and utilise technology.

The properties and behaviour of each component of the set influence the properties and behaviour of the set as a whole (Mittal, Momaya & Agrawal, 2013). At the same time, each component depends upon the properties and behaviour of at least one other component in the set. Because of this interdependence, the components cannot be divided into independent subsets; the system is more than the sum of its parts (Getz et al., 2016). This complex understanding of the interconnectedness sets the basis for the embedded innovation culture within an organisation (Mittal, Momaya & Agrawal, 2013).

2.8 Overview of Jordanian telecommunication market

Jordan is a small country with limited natural resources. However, the Jordanian people are highly educated and Jordanian successive organisations have made a substantial contribution to the economic development of the country. Various improvements have been made during last few years in different fields, including information technology, computerisation, e-government and expansion of the private sector. Jordanian telecomsector is considered as one of the highly competitive business sector (Zabadi, 2016). Jordanian telecommunication regulatory commission was formed in 1996. The TRC is mainly responsible for ensuring the compliance of telecom organisations with government policy, developing and monitoring regulatory policies, and accomplishing ICT objectives set out by the government. Sources have reported that Jordanian telecom sector is having a speedily and substantial growth from last few years (Inta, 2014).

 In the Middle East region, the Jordanian telecom sector is considered as one of the highly competitive telecom markets. A recent index developed by Arab advisory group has reported that Jordanian telecom market in the second highest competitive sector in the Middle East region. The market is mainly divided into different market players, including Zain

telecom with a 40 percent share in the industry, Orange telecom with 36 percent share in the market and Umniah with 29 percent share in the industry (Jordan, 2014). Analysts contend that increased competition in the telecom sector has resulted in reduced pricing, which has benefitted Jordanian telecom customers (Al-Zoubi, 2013). Jordan possesses a high smartphone penetration of over 60% and most users access Over-The-Top (OTT) messaging apps through this device. This has led to declining Short Message Services (SMS) revenues in recent years. Jordanian telecommunication is a billion-dollar sector. Analysts estimate that data service, mobile and fixed line's core markets produce an annual revenue of approximately \$1.18bn (JD836.5m) on annual basis. It equals to the 13.5 percent of the gross domestic product (Inta, 2014).

However, it has been reported that Jordanian telecom sector lacks innovation as Jordanian telecom organisations mainly offer basic telecom services like airtime calls, messaging, airtime balance transfer and internet allowance unlike the Western telecom organisations that offer highly advanced services to their customers (e.g. TV channels etc.). Currently, the sector is changing radically due to the combination of globalisation, market forces, and innovative technologies. Unlike many Arab countries, the Jordanian government has a relatively liberal attitude towards Internet access (Al-Zoubi, 2013). Jordan possesses a high smartphone penetration of over 60% and most user's access OTT messaging apps via these devices. This has led to declining SMS revenues in recent years, similar to trends witnessed worldwide. (Budde.com 2016). Meanwhile, 'liberalisation' and 'privatisation' represent two prominent developments (Chan-Olmsted & Jamison, 2001) of the telecommunications global environment in recent years. Over the past two decades, the telecommunications sector has undergone extensive changes (Zabadi, 2016).

Traditionally, telecommunications services were provided under monopoly conditions through government entities that represented the role of operator and regulator at the same time (Al-Zoubi, 2013). Fueled by the increasing competition and the rapid pace of innovation in information and communications technologies (ICT), development attained by telecommunications regarding the transition from monopoly towards a competitive market model has witnessed different levels of liberalisation (Conchado Peiró et al., 2016).

Jordan began liberalizing its telecommunications sector in 1995 when a new 'Telecommunications Law' was passed creating the 'Telecommunications Regulatory Committee' (TRC) (Qawasmeh & Bataineh, 2010). Compared to other Middle Eastern and

North African (MENA) markets, the provision of telecommunications services in Jordan (PTSJ) is viewed as an advanced one regarding several related criteria (Conchado Peiró et al., 2016); these include the distinct base of information technology and the professional and experienced skills the PTSJ possesses, foreign investments, number of mobile network operators (MNOs), penetration rate (1) that exceeded 120% (TRC, 2012), and market liberalisation. The current stage of deregulation that PTSJ has witnessed may reflect an advanced level of liberalisation in which PTSJ is viewed as "one of the most open telecommunications markets in the Middle East" (Qawasmeh & Bataineh, 2010, p.30).

The analysis of the Jordanian telecom sector reveals it has undergone tremendous development in recent years. In Jordan, telecom is one of the highly competitive industries (Almasri, et al., 2011). Jordanian telecom sector plays a significant role in the national economic development (Qawasmeh & Bataineh, 2010). However, results of some empirical studies suggest that industry is currently facing challenges related to the innovation and knowledge management. For example, Hajir et al., (2015) conducted an empirical investigation to analyse the recent innovation and knowledge management trends in the Jordanian telecom market. The study proposed that there is need to increase the investment in implementing the innovation and knowledge management practices and develop an innovation supportive infrastructure to manage and utilise the extracted knowledge in firms' best advantage (Hajir et al., 2015). It is important for the Jordanian telecom organisations to embed the innovation into their culture for preserving the competitive position in a highly turbulent scenario (Almasri, et al., 2011).

The research gap is towards mapping the mechanisms, process, actors that shape the embeddedness:
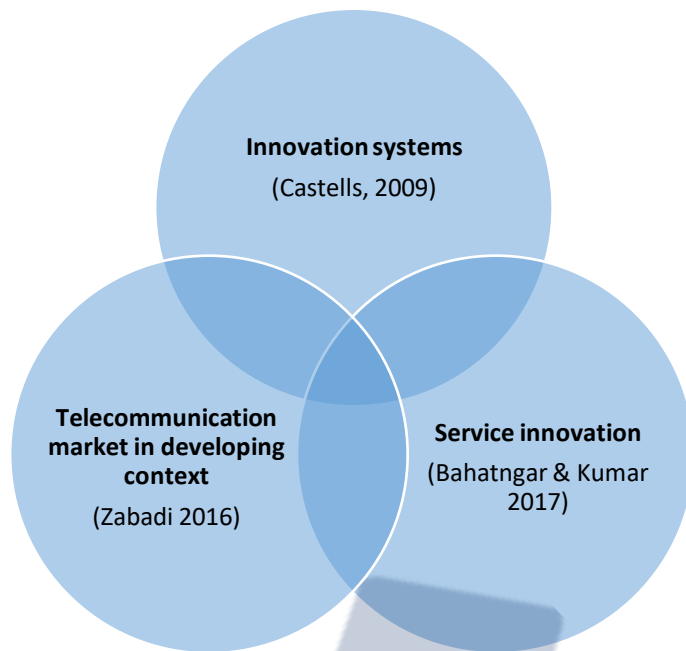
2.9 Normative Theories of Innovation

The main origin of the innovation can be considered as exogenous or even indogenous which implies social construction of knowledge (internal). Regardless of the origin, the attempt for implementing the innovation within the organization may encounter the innate resistance for the normative evaluation. According to McAdam (2005) the constructs for the normative evaluation or normalization is basically referred as functionalist in comparison to the set of norms, routines and standards which mainly conforms to the corporate agenda and also requires the obedience from groups and individuals in prescribed manner. Hence, the normative evaluation is also considered as judgmental and multi-level. Furthermore, it is also considered as the espoused "normalized knowledge" or "common sense" that is specifically recognized by experts within an organization. In light of Guler et al. (2002) it also refers to the isomorphism for normalization which depicts pressure for homogeneity through atavism and replication within the organization. However, it was concluded by Finnegan (2000) that the perspective of employees for the organizational values is rather encouraged to be normative. At the strategic level, the innovative plans and ideas are likely to challenge the wisdom of the senior management for the company. However, it is contended by Alvession and Deetz (2002) that the company's propensity for arriving at the robust truth is mainly institutionalized by the homogenous norms which claims the innovative implementation. It has further been

presented that the normative evaluation if innovation is focused on the effectual role which is exerted is the discipline of normalization and hence generated conflict with the innovators. Eventually the situation is exacerbated within the organization where the decision makers and owners are overly top-down with the approach that lead to further embedding for the normative culture.

2.10 Information System

The information system is a concept which stresses on the flow of information and technology among enterprises, institutions and people is the key towards the innovative process. According to Jacobsson, & Bergek (2011), it also contains the collaboration between the actors which are required for the purpose of turning ideas into services, product and process within the market. Furthermore, the innovation system and the frameworks are focused on comprehending innovation which has become a renowned concept for the policymakers along with the innovation researchers in Europe. In addition, the concept of innovation system is the result of complex relationship among the organizational systems and the research institutes. Furthermore, the innovation systems are categorized into regional innovation systems, national innovation systems, technological innovation systems and local innovation systems. According to Lundvall et al., (2011), the innovation system stresses on information and technology among enterprises, people and institutions which is the key to innovative processes. Furthermore, technology and innovation developments are mainly resulting in complex relationship among the actors.

Chapter 3.   Theoretical Framework

This chapter will analyse different factors affecting the firm innovation and would identify important variables from the existing innovation literature to set the theoretical foundation for the underlying research. The researcher will analyse different innovation theories, models and emerging concepts to extract important one. The insightful discussion of different innovation models and concept will be based to conduct the empirical investigation and analyse the Jordanian telecom market. The chapter will firstly discuss the open innovation theory, its limitations and strategies to overcome the associated limitations. Afterwards, the latest open-inclusive innovation theory will be discussed and researcher will share how it differs from the open innovation and what are the possible limitations. The justification for going beyond the open innovation will be discussed and researcher will justify why contemporary organisations must embed the innovation to enhance the value. Finally, the theoretical discussion will be based to analyse the Jordanian telecom market. The researcher will also identify the conceptual framework that will be based to conduct the empirical research.

3.1 Theory of open innovation

The conventional understanding of the organisational success highlights certain critical success factors that reflect the extent to which an organisation is innovative, including highly competent staff, research and development division and a fault-tolerant corporate culture(Heeks, Foster & Nugroho, 2014). However, the contemporary era has made these elements inadequate to reflect a truly innovative organisation. Such kind of innovation is based on the close-innovation paradigm (Chesbrough, 2003). The mitigating global boundaries, intensifying competition and changing customers' needs with escalating research and development costs superseded the closed innovation theories in recent past by open innovation paradigm (Gerybadze & Reger, 1999). The open innovation theories greatly emphasize on the external resources (Chesbrough, 2003). Veer et al (2013) described the open innovation as a collaborative and interactive process with external stakeholders. Although, the open innovation theories offer various useful insights to organisations, such as strategically wise diversification of the research and development investments, easy entry to different markets, various resource acquisition advantages, broad-base ideas, enhancement in the organisation's internal learning capacity, easy transfer of external knowledge etc., the open innovation paradigm also has some limitations (Veer et al., 2013; Heeks, Foster &

Nugroho, 2014). Ullrich & Vladova (2016) contended that innovation researchers widely discuss the positive benefits of open innovation, ignoring the unavoidable limitations. Various enterprises face different challenges while integrating the open innovation practices (Ullrich & Vladova, 2016). The next section will discuss in detail the open innovation limitations, and how those limitations motivate the innovation researchers to introduce concepts beyond open innovation.

3.1.1 Open innovation limitations

Open innovation leads the organisations, and particularly the small and medium organisations towards uncertainty. Organisations must seek a right balance between negative consequences and possible positive effects. Ullrich & Vladova (2016) mentionthat the dark side of the open innovation has been less studied and less discussed. Moreover, inadequate discussion about the negative effects has resulted into lack of appropriate methods for minimising the associated limitations and finding a right balance, indicating a gap in the innovation literature. Diener, Piller & Brettel (2015) contendthat despite the high popularity of the open innovation, the theory's conventional approach is unable to meet the contemporary challenges of sustainability, accountability attribution to informal and formal actors, knowledge asymmetry and environmental transformations actively shaping the business conditions (Diener, Piller & Brettel, 2015). A substantial evolution of open innovation is required to address the increasing complexity and transforming needs for circularity and higher frugality. The openness degree among different formal and informal external actors in various domains and at different community levels influence the firm's ability to harness the power of network management and co-creation for development of a distributed knowledge system (Veer, Lorenz & Blind, 2012). Based on the review of innovation literature, the researcher has found certain open innovation limitations.

Firstly, the integration of open innovation practices arise issues related to intellectual property rights. The intellectual property rights violation issue can affect the innovation development submitted by external actors. Moreover, it can also cause substantial costs because of any legal action taken against the firm. Secondly, the open innovation can result into a sheer volume of ideas (Veer, Lorenz & Blind, 2012). Although, it is the strength of open innovation that it offers wide-ranging innovative ideas that can be used to maximise the value, however, the massive volume can hinder the reviewing process and make the decision process time consuming and difficult. Lack of appropriate collaboration strategy can lead the firms to abandon the open innovation practices (Veer, Lorenz & Blind, 2012). Thirdly, the

firms seeking to integrate the open innovation practices are required to develop a strong internal structure built over an organised mechanism for acting and accepting unsolicited and solicited submissions (Veer, Lorenz & Blind, 2012). Mostly, the firms lack such understanding that leads them towards failure, and ultimately rejecting the open innovation practices (Lazzarotti and Manzini, 2009). Other open innovation challenges include high process coordination and implementation costs, heavy reliance on the external knowledge that results into a loss of knowledge control (Lazzarotti and Manzini, 2009), loss of strategic power, creativity and flexibility (Grimaldi, Cricelli, Rogo & Iannarelli, 2012).

3.1.2   From open innovation to open-inclusive innovation

The limitations of the open innovation have motivated the innovation researchers to propose different strategies and concepts that can minimise the weaknesses associated with the open innovation and maximise its strengths. The concept of open-inclusive innovation has also emerged in an effort to overcome the open-innovation limitations.

3.1.3   Open-inclusive innovation

The escalating economic pressure and increasing environmental complexities have intensified the quest for frugal grassroots innovations in an interconnected world. The innovation researchers are introducing various models and concepts, such as open innovation, reverse innovation model, inclusive innovation, low-cost frugal innovation, embedded innovation etc. to quench the innovation thirst of proactive firms operating in highly turbulent markets (George, McGahan & Prabhu, 2012). The open-inclusive innovation model involves the different dynamics of relationships between knowledge seekers and knowledge providers that make the whole system responsive, responsible and reciprocal (Gupta, 2016). The model further suggests that in open systems, the inclusive innovation costs go down, resulting into a more inclusive and symmetrical knowledge system. The innovative solutions help in addressing social, skill, sectoral, seasonal and spatial factors (Gupta, 2014). The open inclusive innovation system makes the resources affordable, accessible, adaptable and available to differentiated and varying user needs and endowments besides having a circular nature. However, the successful integration of the open-inclusive innovation requires a comprehensive understanding of the multifaceted interaction between intellectual, ethical, social and natural capital that lies in the innovation's institutional context (Gupta, 2016).

Before understanding the need to shift the focus from open innovation to embedded innovation paradigm, it is necessary to understand how previous innovation models facilitate the communication flow within the organizations, and whether these models offer adequate

guidance to develop effective communication channels that can facilitate the knowledge flow from within and outside the organization, and how acquired knowledge can be used to set the basis for sustainable competitive advantage.

Open innovation allows the open sharing of knowledge, whereas, inclusive innovation ensures the inclusion factor by collaborating with the poor communities. This innovation exchange among communities and corporations is guided by different efficiency and ethical considerations (George, McGahan & Prabhu, 2012). The available literature regards the openness of corporation to seek ideas from the outside with open-innovation policy, irrespective of that fact whether the organizations disclose how the collected information was used to strengthen the innovation foundation (Gupta, et al., 2016).

Von Hippel has disagreed in this regard as the researcher regards the willingness to use the obtained knowledge and openly share the innovation derivations as open innovation (Bogers and Bastian, 2010; von Hippel, 2005). Gupta et al (2016) have characterized the information exchanges into four different strands, low inside out and low outside in, high inside out and low inside in, low inside out and high outside in, and finally the high inside out and high outside in. The open inclusive innovation supports the high inside out and high inside in strand, but the theory doesn't provide adequate guidance to organizations about how such innovative culture could be crafted within the industry (Fleming & Waguespack, 2007). The emerging concept of embedded innovation best serves the purpose in this regard. However, before discussing how a shift from the dis-embeddedness to embeddedness can improve the innovation practices of Jordanian telecom organizations, this section will briefly describe four above mentioned innovation exchange strands:

The close innovation theories cultivated the low inside out and low outside in innovation culture. Within this culture, the organizations acted like an ostrich and management strongly resisted to share the information as knowledge was regarded as a source to get a sustainable competitive advantage (Baden-Fuller, 1995). This innovation culture lacked the resilience and consequently the enterprises were highly vulnerable to market, institutional and climatic risks. However, the increasing environmental complexities made the survival of these organizations almost impossible and they either disappeared, or acquired by proactive market players (Simanis and Hart, 2009). The low inside out and low outside in was eventually replaced by a new strand, low inside out, and high outside in. As the name indicates, the organizations realized the importance of two-way innovation

exchange. However, the enterprises were still unwilling to openly share their innovation derivations. Now, the organizations adopted a sponge like behaviour (Poetz and Schreier 2012), and showed higher willingness to learn from outside and low willingness to share the way they convert knowledge into innovative organization capabilities (Laursen & Salter, 2004).

These crowdsourcing strategies are used by many large enterprises. However, these enterprises don't fully follow the open innovation principles due to their unwillingness to share information with external community. The innovation providers seldom know how their provided information was used by the company (Gupta et al 2016). Such kinds of institutional arrangements don't last very long as innovation providers lack the motivation to share when they don't know how provided knowledge will be used and to what extent the provided knowledge is useful. Eventually, this lack of motivation drives the innovation providers somewhere else (Gupta et al 2016).

The third innovation exchange strand "high inside out and low outside in" works in an opposite direction. Here, the enterprises adopt a pollinator behaviour. This innovation exchange model shares some resemblance with the open innovation theory. Tesla is an example of this innovation exchange strand (Quinn and Brachmann 2014; Dahlander & Gann, 2010). Within this innovation environment, the knowledge public goods are created without reciprocity expectations. The research and development institutions share the produced innovative knowledge with outside world to let the whole community benefit from it. However, the abundance of knowledge cause some organizations to avoid learning from outside that could be fatal for long-term business survival (Dahlander & Gann, 2010). Lastly, the high outside in and high inside out is the most favourable and ideal innovation exchange strand that results into development of highly innovative culture. It lets the innovation embed into each business process and drives the organizations to develop meaningful relationships with innovation providers and overall community (Gupta et al 2016).

However, the cultivation of such innovative culture within any sector requires an open mind and heart. The enterprises adopting this innovation exchange strand survive in the long-run and their development and growth relies on the continuous iterative cycle of sharing and learning (Abrol & Gupta, 2014). One example of this innovation strand is the Honey Bee network, where like-minded individuals such as non-governmental organizations, entrepreneurs, policy makers, academicians, farmers, scholars and innovators connect and

share the innovation derivations for collective betterment. It connects the people and facilitates the information flow by hybridising the open source model with closed stratified, IP-based innovation model (Abrol & Gupta, 2014).

The above discussion suggests that corporate leaders must consider the value of sharing ideas from outside and adopting a holistic view emerging from the grass-root level. However, it requires mutual responsibility and respect that can monitor the innovative ideas exchange between informal and formal sectors. The researchers have introduced the notion of embeddedness to mark this transformation of integrating firms into communities to ensure high outside in and high inside out knowledge flow. Such community integration can assure the absorption of exploitable knowledge. It is important to note that notion of embeddedness is not a new term. It was introduced by Granovetter (1985) when the researcher emphasized the need to go beyond the open innovation to tackle the changing environmental needs. This notion conceptually embraces the particular ambidextrous capabilities of leveraging the institutional arrangements for accomplishing embedding process (O'Reilly and Tushman, 2008). Such institutional arrangements maybe mechanic, organic, exploitative, explorative or explicit in nature (Hafkesbrink and Evers, 2010; Tushman et al., 2002), considering the phase and nature of innovation process and relationship characteristics. After discussing the limitations of the open innovation theories, now the researcher will discuss how inclusive innovation theories provide the guidance for crafting a high outside in and high inside out innovation exchange environment.

The last two decades have witnessed the uncoupling, escalating social and economic development at global stage. However, despite the tremendous development, a large number of people are living below the poverty line (Chataway, Hanlin & Kaplinsky, 2014). The proactive organizations have taken the poverty alleviation as a challenge as well as a viable opportunity that could be beneficial for organization as well as overall society (Foster and Heeks, 2013). The emergence of "inclusive innovation" notion reflects this major shift from dis-embeddedness and exclusion to inclusiveness, a benign and partial form of embedded innovation. The main reason behind this shift is that enterprises are increasingly realizing that capital intensive nature of innovation trajectory that is destructive to environment, and only creates values for the organization is one of major reasons behind escalating poverty and exclusion (Chataway, Hanlin & Kaplinsky, 2014).

Although, a re-orientation towards the inclusive innovation path can play highly important role in overcoming the escalating poverty and exclusion, the current inclusive innovation theories offer a partial and weak understanding of underlying phenomenon (Foster and Heeks, 2013). The inclusive innovation researchers have offered limited explanation of dynamics and nature of inclusive innovation and this conceptual gap has motivated the researchers to combine the open and inclusive theories for broadening the understanding. The current inclusive innovation theories must be developed and understood in context of innovation cycle (Foster and Heeks, 2013). The roles played by poor people as consumers and innovation providers, and distinction between product and process innovation must also be clarified to maximize the effectiveness of inclusive innovation (Chataway, Hanlin & Kaplinsky, 2014). The innovation researchers must recognize the changing innovation needs of organizations and their increased interest towards exploring the bottom of the pyramid. Moreover, the consideration must also be given to understand the role played by growth trajectories in determining the innovation direction, and in facilitating the associations between poorest world community and rest of the world (Foster and Heeks, 2013). Chataway, Hanlin & Kaplinsky (2014) emphasized the need for an effectively balanced and holistic approach to the inclusive innovation that could facilitate the active innovation exchange among all stakeholders, resulting into effective deployment of resources to assist the recoupling of development and growth.

Based on the in-depth theoretical research, Altenburg & Lundvall (2009) proposed that positive developments in the innovation exchange environment requires the organizations to think beyond the inclusive innovation. Although, the inclusive innovation trajectory is positive, the scope is limited and there is considerable opportunity to broaden the scope and enhance direction and pace of inclusive innovation (Fressoli et al 2014). The researchers further proposed that current inclusive innovation theories have not clarified the set of objectives for each innovation actor and there is a non-existent or weak grasp of different inclusive innovation elements, resulting into inability in introducing the collaborative synergistic innovation policies and accessing the low hanging fruit (Chataway, Hanlin & Kaplinsky, 2014). There is a need to develop a supportive and appropriate national innovation system that can direct the scare innovation resources in cost-effective manner. To overcome the limitations of open and inclusive innovation, the theory of open-inclusive innovation has been introduced (Fressoli et al 2014).

However, it is not a new theory or paradigm, but only a combination of previous innovation theories with an aim to minimise the weaknesses and leverage the strengths of both theories. The open-inclusive innovation paradigm suggests the organizations to ensure a high outside in and high inside out flow, however, this concept requires further refinement to overcome the conceptual limitations. This section has highlighted the major reasons for shifting the focus beyond open innovation. The researcher has analysed different arguments made by past researchers that stress the need to re-visit open and inclusive innovation theories due to their associated limitations. Next section will discuss the emerging embedded innovation paradigm and how this emerging concept helps the innovation researchers in overcoming the conceptual and practical limitations of open and inclusive innovation theories.

3.2 Embedded Innovation: Beyond open and inclusive innovation

The embedded innovation paradigm is a transition beyond the open and inclusive innovation theories. However, at this stage, the concept requires rigorous refinement and exploration to transform into a new innovation-theory (Simanis & Hart, 2009). The embedded innovation concept overcomes the conceptual limitations of past innovation theories. It is a step ahead than close, open and inclusive innovation theories (Hafkesbrink, Krause and Westermaier, 2010). On the continuum of embeddedness, the close innovation theories lie at one end of spectrum, open innovation theories lie somewhere in middle, and embedded innovation concept lies at the opposite end. It fosters an innovation embedded environment that results into a meaningful innovation exchange between innovation actors (Noordhoff et al., 2011).

3.2.1 A shift from dis-embeddedness to embeddedness

With the passage of time, the shift from dis-embeddedness to embeddedness has become visible (Hafkesbrink, Krause and Westermaier, 2010). The organizations are increasingly seeking to embed the innovation exchange into organizational processes so that meaningful collaborations with the stakeholders and innovation actors could be made (Rutten & Boekema, 2007). Schweisfurth (2012) proposes that embedded innovation paradigm assists the organizations in leveraging its relationships with community to its maximum potential (Schweisfurth, 2012). However, review of literature has revealed that innovation researchers have underexplored the potential of embedded innovation, and there is need to conduct in-

depth exploration for refining and broadening the understanding about underlying phenomenon (Rutten & Boekema, 2007). The embedded innovation stresses the importance of developing close ties with the local community and builds the customer loyalty based on mutual trust (Ferrary, 2011). Embedded innovation model guides the modern business enterprises to develop and sustain the meaningful relationships with all stakeholders and innovation providers, and presents a strategically wise give and takes relationship with the customers and local community (Baldwin & Von Hippel, 2011). This model views the engagement with stakeholders as transformational rather than transactional, and guides the organizations to develop a sense of mutual responsibility by focusing on the latent customers' needs through effective communication (Baldwin & Von Hippel, 2011). However, the lack of adequate exploration has limited the organizations' ability to adopt embedded innovation model in real world settings (Hafkesbrink, Krause and Westermaier, 2010).

The underlying research intends to explore the potential of emerging embedded innovation paradigm in improving the organizations functioning in highly competitive markets. Hafkesbrink & Schroll (2011) explored the embedded innovation concept and proposed that this emerging notion is particularly meaningful for small and medium business enterprises, or industries facing the resource constraint issues. Today, the digital economy along with a huge influx of small and medium organizations require innovation researchers to take a step ahead open innovation theories (Hafkesbrink & Schroll, 2011). Mostly, the open innovation has been discussed in context of large organizations that have enough resources and capacity to absorb the knowledge from outside and ensure the inside-out knowledge exploitation and technology transfer. Various successful examples of knowledge absorption strategies from external sources have been discussed by the past innovation researchers (Chesbrough, 2004). Contrarily, the embedded innovation focuses on the knowledge transfer abilities of small and medium enterprises (Hafkesbrink, Krause and Westermaier, 2010).

This innovation model leverages the collaborating nature of organizations during the innovation process when knowledge cycles are highly dynamic and knowledge is widely distributed among innovation actors. Diener and Piller (2010) contend that embedded innovation offers more holistic view as it suits both large and small organizations. On the other hand, open innovation only suits large business enterprises, where management can sophisticatedly manage the whole open innovation process by using open innovation toolkits and lead-user approaches. Big enterprises use the innovation contests to create the adequate gravitational force for attracting innovation providers, whereas, small and medium enterprises

lack sufficient resources to leverage the benefits offered by open innovation (Hafkesbrink, Krause and Westermaier, 2010).

The knowledge sharing within the open innovation context relies on the multiple interactions between the innovation actors (Diener and Piller, 2010). On other hand, decentralized and individual small and medium enterprises that share the knowledge must develop multiple interactions with the local community to foster innovation. The organizations seek for a win-win situation by collaborating with the community (Hafkesbrink, Krause and Westermaier, 2010). The knowledge is collectively exploited within communities and networks etc. Diener and Piller (2010) regard the open innovation as a transition from the dis-embeddedness to embeddedness, that is, from close innovation to the embedded innovation. The emerging innovation paradigm develops a collaborative network or cluster of organizations with the local community that is adequately stable and flexible to embed the innovative knowledge and ensure the effective exploitation of collaborative learning within multi-agent system (Diener and Piller, 2010).

Considering the importance of embedded innovation for tackling the innovation needs of modern enterprises, this study intends to assess the embedded innovation practices of Jordanian telecom organization. The researcher will assess the willingness of telecom management to collaborate with a community and build a network that can facilitate the innovation exchange among different actors. For this purpose, the underlying research has adopted the theoretical framework proposed by Hassink (2001). This framework will be based to conduct the Jordanian telecom sector specific empirical research. The section will also analyse different components of theoretical framework considering existing literature. Here is the graphical representation of theoretical framework adopted by the underlying research:

Proposed theoretical framework of embedded innovation in telecom sector

The theoretical framework has been adapted by the study conducted by Hassink (2001), upon the understanding and nature of the topic which is focused towards evaluation of trends and challenges of the telecommunication sector of Jordanian Telecommunication sector. The main variables of the study were research and development, skill qualification and core competency, business environment and innovation support system. Therefore, upon the understanding of the variables, the following theoretical framework has been designed, where the variables has been discussed in an in-depth manner in literature review section.
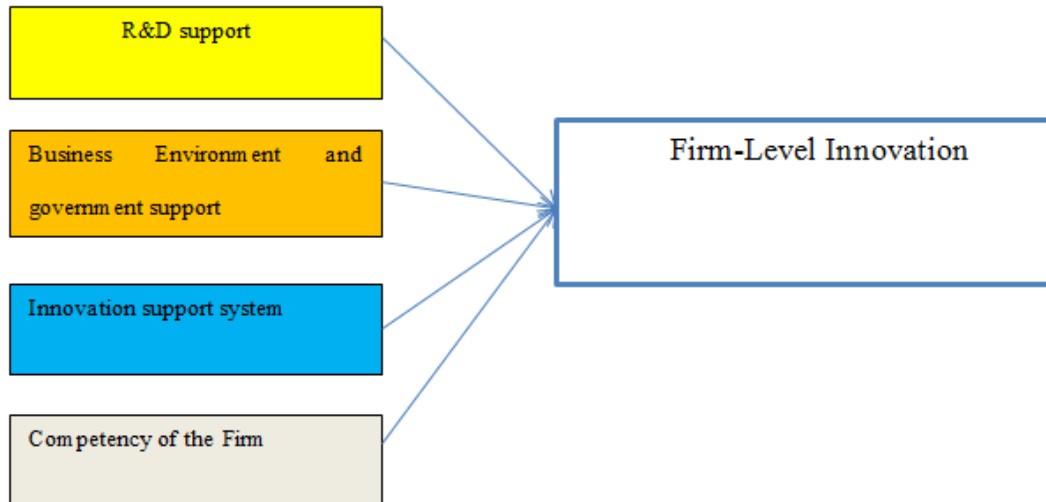
Source: (Adapted Hassink, 2001)

3.2.2   Critical Evaluation of Hassink Model

The Hassink framework is based on regional innovation support systems which have been adopted in South Korea. The framework was focused around four factors termed as product environment, internal factors, research and development and lastly the innovation support system. This framework has been used in the country of South Korea for the regional innovation. This framework was applicable for different industries who are operating as the SME-oriented companies focused on innovation support policies in South Korea. The framework emphasized on strengths of Korean SMEs and their innovation support which has been previously judged in the study Nugent (1994). The central idea which has been proposed in this framework is focused on the innovation and the spatial level of influences which innovation had on its sub-factors. The positive thing about the model is that it highlights that regional authorities plays a significant role as compared to international and national authorities when it comes to the embedded innovation. Furthermore, the author has highlighted that the embedded innovation support system is clearly related to the regional development in South Korea along with their SMEs. Moreover, the framework has presented that the dirigiste system can be successful for the investment-driven stages when the country can achieve economic development which is mainly dependent on the large enterprises. Furthermore, the support for South Korean SMEs towards embedded innovation is focused on replacing the outdated systems from the country. However, the framework is only focused on South Korean region which can further be intensified by considering other countries with respect to their SMEs. However, this framework has helped in understanding overall

significance of embedded innovation because it covers every aspect which is related to innovation which is research and development, production factors, environment and internal factors. The most important aspect is the research and development because the innovation cannot be possible without an effective research and development which eventually leads to successful innovation of the organization. Furthermore, the model has provided with the guidance to the embedded innovation which helps in mastering the economic crisis and the factors which helps in bringing innovation driven growth of the firm. In addition to the above statement, the embedded innovation support system plays a significant role in the enhancement of innovation policies. The study has employed this framework to highlight the challenges faced by the Jordanian telecom industry in establishing diversified relationships with multiple environmental actors. This is the framework for firm-level innovation at an organisation where the main determinants are research and development, business environment, innovation support system and the competency of the company.

The main research aim is to enhance the competitiveness of Jordanian telecom industry and ensure its survival in highly turbulent global telecom market by embedding the innovation and developing a positive environment to facilitate the innovation. Review of literature has identified that there is lack of adequate empirical evidence to explore the factors affecting the innovation within Jordanian telecom market. Various research studies have analysed different aspects of Jordanian telecom sector, such as Shanikat (2008) analysed the change in the organisational structure after the privatisation of Jordan telecom industry. Khasawneh, Regan & Gillard (2011) analysed the adoption pattern of Jordanian telecom customers and overall diffusion of innovation in Jordan society. However, the researchers didn't focus on the telecom organisations and challenges faced by them while diffusing the innovation into their business operations.

Hajir et al (2015) analysed the role of knowledge management infrastructure in enhancing the Jordanian telecom companies' innovation practices. This research study has offered useful insights as researchers highlighted different factors affecting the innovation diffusion including overall physical environment, technological advancement, human resource practices, overall organisational structure and culture. The researchers concluded that Jordanian telecom organisations must develop an efficient knowledge management infrastructure and should invest in information technology for fostering such innovative environment. The researchers further contended that efficient knowledge management infrastructure is a must for integrating innovation and sustaining competitive edge in the long-run. However, the study didn't adopt a holistic approach to understand the role of different factors affecting the innovation embeddedness in Jordanian telecom market.

Moreover, researchers were unable to get an adequate response from the firms due to privacy issues. Quantitative research nature further hindered the researchers' ability to get in-depth insights. Insights were only taken from the management that weakens the reliability element. The study suggested the future researchers to adopt a holistic view while exploring the factors affecting the innovation within Jordanian telecom sector and overcome these limitations.

Hence, the underlying research has decided to employ the framework offered by Hassink (2001) as it includes different elements and presents a 360-degree view of the overall innovation environment. The framework guides researcher to collect data from multiple environmental actors, such as management customers and government officials and avoid relying on single data source to strengthen the reliability. The firm innovation model was basically proposed to enhance the innovation practices of South Korean businesses. The model helped the South Korea's initiatives to foster the innovation-driven growth and develop an innovation-supportive infrastructure. Review of literature has suggested the lack of sufficient empirical evidence for exploring the factors affecting the firms' innovation in Jordanian telecom industry. Although, some researchers have analysed the impact of some factors on innovation system, mostly the studies have either focused on the firms' internal factors such as organisational structure, organisational culture, or have analysed the customers' attitude towards innovative mobile devices (e.g. İzadi, Zarrabi & Zarrabi, 2013). It suggests the need to adopt a holistic view and analyse the effect of multiple environmental factors of firms' innovativeness. The Embedded Innovation paradigm proposed that social embeddedness occurs because of complex linkages among environmental actors, and is facilitated by the efficient knowledge flow within the society (Simanis & Hart, 2009). Hence, the current research has chosen this model to explore the innovation embeddedness of Jordanian telecom industry. Different dimensions of proposed model will be applied to the Jordanian context to highlight the motives, perceptions and challenges faced by the Jordanian telecom market players. Moreover, application of this model will also enable the researcher to adopt a holistic view and understand the interconnectedness among diversified stakeholders.

As mentioned earlier, although, review of literature also reveals other models to study the factors affecting the firm innovation, however, they lack some important dimensions and don't offer the complete view. For example, İzadi, Zarrabi & Zarrabi (2013) assessed different firm innovation models to evaluate the innovation system. The paper critically analysed the strengths and shortcomings of these models. Based on critical analysis, the

researchers contended that chief contribution of such firm innovation models is that they assisted many countries in formulating effective, innovation-supportive strategies. However, innovation literature suggests that there is lack of adequate empirical evidence to support the theoretical underpinnings of these models. Among different models proposed by different researchers, this research has chosen the Hassink (2001) firm innovation model due to its inclusiveness of all major factors.

This section will explore the dimensions of the proposed framework in context of Jordan, and along with its application on the global level to extract important insights and widen the background information so that strong theoretical foundation could be set for conducting the empirical research. The framework can be applied to the organisations in the global level for increasing their efficiency towards the embedded innovation system.

3.3 Innovation support system

Innovation literature highlights the increasing influence of environmental factors in supporting the innovation (Lee et al., 2014). The innovation system depends on various factors such as government's policies towards entrepreneurship, technology transfer and advice agencies, current state of entrepreneurship and country's industrial, technological and regional development (Dutta & Lanvin, 2012). This research will analyse the Jordanian government's policy framework and ability of Jordanian telecom organisations to devise and implement innovative policies. Researchers propose that a shift from labour intensive, low technology, mass production industry to high-tech, skill and capital intensive industry is important to support the regional innovation system (Lee et al., 2014). In an innovation-supportive environment, government as well as organisations emphasise on a decentralised governance at national and firm level (Dutta & Lanvin, 2012).

The current pace of Jordan towards such innovation supporting environment is slow but steady. Recent studies on the Jordanian innovation support system suggest that country is facing difficulties in integrating the innovation and its national innovation system is inefficient and underdeveloped (Abuhamad, 2014). Researchers contended that country's national innovation system is suffering from inadequate coordination among different components (Sultan & Soete, 2012). To develop an efficient innovation support system, the country requires to open-up towards global knowledge, make important reformations in the universities, invest on research and development activities, upgrade the research and development infrastructure, establish incubation systems and facilitate the knowledge transfer to embed the innovation into corporate environment (Sultan, 2010). Such innovation

embedded national and organisational culture can play significant role in the national and regional economic development (Abuhamad, 2014).

Researchers also recommend that Jordan needs to build a comprehensive knowledge network, formulate an effective innovation policy, develop its human resource and promote information and communication technologies to support such culture (Sultan & Soete, 2012). Nation's competitiveness doesn't rely on a single company or an industry, but on overall innovation system of all major industries. Stimulating innovation and research is one of major tasks of national economic development. An innovation embedded organisational and national culture not only enhances the performance of a single sector, but in the long run, it results into full employment, sustainable economic development and positive balance of payments (GTZ, 2009). The underlying study will empirically analyse the Jordan's organisational and national innovation support system and its impact on the telecom industry.

Overall, the current situation of the Jordan's national innovation support system is not satisfactory to facilitate the transformation towards the emerging innovation 3.0 paradigm. The Embedded Innovation paradigmstresses the need of collective learning and social embeddedness that mainly depends on the untraded interdependencies and tacit knowledge (Boyer, 2003). Resultantly, a dialectical association formulates between the space and innovation. However, such interconnectedness is dependent on the institutional, cultural and social realm for successful innovation (Simanis & Hart, 2009). Various studies have identified conditions and factors affecting the socially embedded firm innovation, such as industry nature, industry competitiveness, technological advancement, communication and knowledge-sharing processes, government support and expenditure on research and development activities (Crescenzi & Rodríguez-Pose, 2011). In context of Jordan, above discussion suggests that lack of comprehensive knowledge framework, inadequate institutional support, risk averse attitude of financial institutions and inadequate research and development expenditure erect barriers towards such socially embedded innovation (Sultan & Soete, 2012). Hence, empirical research is required to highlight the benefits that this emerging innovation paradigm can offer to businesses and overall society so that Jordanian government and telecom organisations can be convinced to revise their strategies and facilitate the industry's transformation towards new paradigm to preserve its competitiveness at local and regional stage.

3.4 Research and Development infrastructure and policies

Recent initiatives taken by the Jordanian government such as free trade agreements and development of strategic commercial partnerships with the neighbouring countries (Turkey and USA) have supported the national innovation system of Jordan (Sultan & Soete, 2012). The country also availed membership of Agadir FTA and is heading towards breaking the barriers to sustainable economic development (JMoP, 2011). Moreover, the foundation of University of Jordan in 1962 and development of industrial research centre were the milestone achievements in strengthening the national innovation system. The government has also developed 5-year national research strategic plan to strengthen the research and development activities (HCST, 2011).

Last few decades have observed an increased interest of Jordanian government towards promoting information and communication technologies in different sectors (Jordan ICT Forum, 2010). These recent developments have resulted into increased digital penetration improved education and a stimulated demand for different internet services. The initiatives have directly affected the Jordanian telecommunication sector. However, more initiatives are required to address the challenges faced by the Jordanian business environment and ICT industry (Sultan, 2010). Although, mobile penetration has increased during last few years but telecommunication services are not well-developed, penetration lacks redundancy and broadband internet access is highly expensive. Many Jordanians still cannot afford to own a PC or an expensive mobile device (Moh'd Al-adaileh, 2009).Regulatory and legal hurdles also hinder the innovation and ICT integration in different sectors. The Jordanian government lacks a mature vision and understanding of ICT. UNESCO (2010) reported that Jordan's high-tech exports are very low compared to other manufacturing exports. High technology is an essential element for fostering the innovation, stabilising the inward foreign direct investment and overall economic development (Sultan & Soete, 2012).

An innovation embedded environment enables the flow of information and technology among different environmental actors for the betterment of organisation, stakeholders, community and overall country (Bozzola, Swanson & Ting, 2016). The interconnectedness among institutions, enterprises and people is key to embedded innovation (Sultan & Soete, 2012). Innovation researchers propose that technology and innovation development is the outcome of complicated web of relationships among different system components, including research institutes, government, universities, business enterprises and regional community (Antonioli, Mancinelli & Mazzanti, 2013). Results of some empirical

studies suggest that Jordanian government officials are well-aware of the need to embed the innovation and improve national innovation system by facilitating the technology and knowledge flow within the system (Sultan & Soete, 2012). The lack of coordination among different ministries and government institutions hinder the actors' ability to implement their own innovation programs. Some analysts contend that lack of documented innovation policy can be a reason behind lack of innovation in Jordanian business environment (Sultan, 2010).

The heterogeneous research and development framework of Jordan comprises many private and public universities and the main focus of R&D projects is on ICT, nanotechnology, biotechnology, energy and water (Akash et al., 2016). Technology transfer is under-developed. Interestingly, Jordan has highest number of researchers in Arab world and is among 3 Arab countries in terms of research publications (UNESCO Science Report, 2010). However, inadequate technology transfer hinders the researchers' innovative abilities. Current Jordanian research centres like National Energy Research Centre and Princes Haya Biotechnology Centre face financial challenges due to lack of adequate support from institutions (GTZ, 2010). Jordanian incubators network is flourishing but is only producing a moderate result. There is inadequate financial support and young entrepreneurs migrate at a later stage for better earnings (Sultan & Soete, 2012).

3.5 Business environment and embedded innovation

Overall business environment and competition nature in different industries also affect the innovation system. When businesses adopt red ocean competition strategy, the negative competitive barriers hinder the innovation process (Sultan & Soete, 2012). Whereas, blue ocean strategy enables the businesses to cooperate with each other and develop a web of networks to foster innovation. Analysis of Jordanian business environment reveals that Jordanian economy heavily relies on the small business enterprises. Ministry of trade and industry proposes that 92 percent of Jordanian business enterprises are micro firms, 7.4 percent are small and medium firms and only 0.6 percent are large enterprises (MIT, 2011). Various studies have confirmed that Jordanian business environment lacks the innovation and small firms resist adopting innovative practices. Studies also confirm that region's political system doesn't support the innovation and Jordanian business enterprises mostly lack the financial support and technology oriented human resource (Sultan, 2010).

In 2010. Jordan was ranked as 100 out of 183 for business activities, it was ranked 127 for getting credit and 125 for starting business. Jordanian entrepreneurs mostly face the capital and risk related problems. Strict budget constraints discourage most of institutions

from supporting the entrepreneurs. Jordanian engineers' association and chamber of commerce experts stressed the institutional support for inculcating innovation (Abuhamad, 2014). Some analysts confirm that Jordanian chamber of commerce provides adequate support to other institutions and arranges training programs for financial, legal and management affairs (Sultan, 2010). However, on overall environmental analysis suggests that business environment needs to embed innovation for achieving economic efficiency (Sultan & Soete, 2012). The economy of Jordan mainly relies on its service sector that constitutes around 67 percent of the gross domestic product. Rest 33 percent is divided into industry and agricultural sector with respective proportions of 3 percent and 29 percent respectively. The Jordanian government shows a vigorous attitude towards incentivising the business and foreign investment growth. Recently, the influx of around 800,000 Syrian refugees have further increased the pressure on Jordanian economy, stressing the need to increase current business efficiency.

Talking about the business environment of Jordanian service sector, a recent report published by the Schiff, Schmidt & Troncoso (2015) suggest that despite government rigorous initiatives to promote and stabilise the business environment, the region has yet to develop an innovation supportive environment. Schiff, Schmidt & Troncoso (2015) further contended that incremental process improvements in key business sectors can push-up the Jordan's ranking in terms of healthy business environment. Almahamid, Awwad & McAdams (2010) report that Jordanian business environment has badly affected from last three decades due to major fluctuations in the global economic and business environment. However, the region has some core strengths whose effective capitalisation can bring major progression in Jordanian economy (Almahamid, Awwad & McAdams, 2010).

Overall, the Jordanian business environment doesn't provide enough support for socially inclusive embedded innovation. Research evidence suggests that Jordanian business sector adopts risk averse attitude, particularly the financial institutions that consequently affect the firm innovation. The application of embedded innovation paradigmimposes significant challenges when organisations are inflexible, government is not supportive and financial institutions hold a highly risk-averse attitude. Unfortunately, the Jordanian business environment is characterised by all these factors. Analysts have repeatedly suggested the Jordanian government and market players to revise their business strategies to ensuring long-term survival. For example, Elsheikh, Cullen & Hobbs (2008) contended that Jordanian telecom sector lacks the innovation, and is still employing the outdated business practices.

Such unwillingness towards innovation integration can cause serious problems for industry in future.

However, literature also identified some studies, which report that Jordanian telecom organisations have started taking knowledge creation initiatives to foster the innovation and build an effective knowledge sharing framework. For example, Kanaan & Gharibeh (2013) conducted an empirical investigation and reported that Jordanian telecom organisations are actively engaging with the employees to conduct the productive knowledge and information sharing activities. The research also reported a direct positive effect of knowledge sharing activities on the employee satisfaction, and consequently improved organisational performance (Kanaan & Gharibeh, 2013). The underlying study derives the motivation from these results as if collaboration with the employees for innovation integration and knowledge creation can offer positive results, then effective collaboration with the stakeholders for innovation embeddedness can not only enhance the firm performance, but can also improve the industry practices, consequently resulting into substantially increased contribution towards local and regional economic development. Currently, the telecom market has already achieved maximum adoption rate and opportunities for the market players have significantly declined due to decreased growth chances. Hence, the embedded innovation is not an option, but has become a requirement in highly saturated Jordanian telecom industry (Alomari & Elrehail, 2013).

3.6 Internal factors

A brief analysis of Jordanian telecom market has been described in next section to highlight the internal factors affecting the innovation embeddedness. The underlying study will conduct a comprehensive empirical analysis to understand how these factors are playing their role in heading towards innovation 3.0.

3.6.1 Skills, competition and strategies within Jordanian telecom market

The country has an abundance of information technology specialists whose skills are yet under-capitalised by business sector (Almahamid, Awwad & McAdams, 2010). Interestingly, Jordanian economy is considered as among most open economies in North African and Middle East region. It has resulted into emergence of non-traditional business sectors such as tourism, telecom and information technology. Despite such valuable assets, the country still needs to take effective initiatives for creating a healthy and innovation supportive business environment (Schiff, Schmidt & Troncoso, 2015).

Zabadi (2016) recommended the Jordanian firms develop multiple communication channels and integrate sustainability by collaborating with the community to ensure their survival in highly competitive global telecom industry (Zabadi, 2016). Developing telecom sector of Jordan that is already facing resource constraints should devise innovative knowledge management strategies to deal the economic and environmental challenges. Hajir et al., (2015) contended that knowledge management infrastructure has a significant effect on the innovation and recommended future researchers to conduct an in-depth investigation and explore other factors affecting the firm's innovation practices (Hajir et al., 2015). The underlying research will fill this gap and focus on identifying different factors that affect the embedded innovation in Jordanian telecom market.

In contemporary era, the telecom sector has gained significant importance for the national economic development and makes a substantial contribution to the gross domestic product (Hardan & Shatnawi, 2013). In Jordan, the industry is among the most competitive business sectors at local and regional level. The increased importance requires market players to build multiple ties with the environmental actors and embed innovation into business processes for preserving competitiveness. The sustainability of the Jordanian telecom market depends on the telecom operators' ability to develop a connecting web among stakeholders and ensure financial stability. Alomari & Elrehail (2013) shared the statistics of telecommunication regulatory commission, which report that Jordanian telecom market is losing its ability to grow its revenue as penetration rate has exceeded 120 percent. Considering these statistics and intensifying competition within the industry, the telecom operators must revise their traditional business strategies and embed the innovation to ensure the long-term survival. Hardan & Shatnawi (2013) reports that Jordan holds the 1st rank according to the competition index followed by Saudi Arabia, Palestine, Oman, Egypt, Morocco, Iraq, Tunisia, Yemen, Bahrain, Algeria, Sudan, Mauritania, Kuwait, Qatar, UAE, Syria, Libya and Lebanon (Hardan & Shatnawi, 2013).

3.6.2 Innovation as core competency

Review of literature identified various studies that explored how Jordanian telecom organisations are using the innovation as a tool to enhance their competitiveness in the market and bring operational efficiencies (Zabadi, 2016).Although, studies have focused on different organisational dimensions and haven't adopted a holistic view, almost all have contended that organisations are seeking ways to sustain the competitive advantage through innovative business practices. For example, Alamro & Rowley (2011) conducted an

empirical investigation and reported that Jordanian telecom organisations are adopting innovative branding strategies to attract the customers. Although, the study specifically focused on the branding, based on semi-structured interviews with telecom senior management, the study concluded that effective branding strategy depends on the firms' ability to adopt a holistic view, build open relationships with the stakeholders to get important knowledge and focus on multiple dimensions, such as brand architecture, brand values, brand identity, brand personality and brand positioning (Alamro & Rowley, 2011). The researchers specifically highlighted the importance of opening multiple communication channels and integrating innovation into business operations for formulation of successful branding strategies in telecom market. Opening of multiple communication channels, developing open relationships with multiple stakeholders and adopting the holistic view are among the most important principles of embedded innovation.

Another study conducted by Hajir et al., (2015) proposed that Jordanian firms' innovation embeddedness relies on their ability to integrate the advanced technology and refine their knowledge management abilities. The researchers agreed with Alamro and Rowley (2015) by commenting that building close relationships with stakeholders is highly important for sustaining the position in the market. The study identified some factors that directly affect the firms' ability to integrate innovation and build an innovation supportive knowledge management infrastructure, including organisational structure, workplace environment, communication with the stakeholders and technological advancement (Hajir et al., 2015). However, Al-Hyari, Al-Weshah & Alnsour (2012) and many other studies report that Jordan has weak financial support system for the development of new business enterprises. Firms face strict financial constraints that hinder their ability to adopt innovative solutions to existing challenges. The Jordanian government must formulate effective policies to develop the financial support system for innovative ventures. Reports further suggest that financial grant for the capital-intensive firms is very limited (Sultan & Soete, 2012).

Jordanian banks are highly risk averse and conservative while making investment decisions. The ineffective current legislations resulted into underdevelopment of venture capital instrument. These factors also affect the telecom organisations and discourage them from making radical, innovative decisions (Sultan & Soete, 2012). A shift towards embedded innovation requires radical change in the thinking and decision making pattern of organisations. To make this happen, the government and overall environmental support is crucial. It is not only the problem of big market players, but have badly affected the start-up

firms (Noordhoff et al. 2011).These challenges also affect the managements' ability to incur substantial expenditure on research and development activities, which is crucial for the successful transformation towards emerging innovation 3.0 paradigm, that is, embedded innovation (Sultan & Soete, 2012).Al-Hyari, Al-Weshah & Alnsour (2012) reports that currently, the public funded programs for the corporate research and development activities are insufficient. These are among the main reasons why Jordanian telecom industry lacks the innovative practices despite highly competent human resource, increased penetration rate and integration of advanced technology (Alamro & Rowley, 2011).

Chapter 4.   Research Methodology

The research intends to investigate the trends, processes and the management challenges in Jordanian telecom industry and how they influence embedded innovation and how embedded innovation consequently influences service innovation in the industry. This researcher will mainly explore the perceptions of Jordanian telecom organisations towards embedded innovation. The organisational processes will also be evaluated to determine their influence on the adoption of embedded innovation.

A qualitative approach was most suitable for the study because it involves the collection of detailed descriptions of situations, events and interaction between people ensuring detail and depth in the evaluation (Maxwell, 2012). In addition, qualitative approaches essentially involve the extensive gathering of in-depth information about a small number of people or companies which are difficult to present in the statistical form. In regards to service innovation, an interpretive approach is critical for understanding, explaining and gathering opinions and attitude of people in situations where there are interactions and integration of acts (Sachwald, 2000). The qualitative approach allows achieving a significant understanding and meaning of the questions 'why' and 'how'.

4.1 Research Philosophy

This research has chosen the interpretive research paradigm to provide the philosophical foundation to the underlying research. Under the guidance of interpretive research paradigm, the researcher will be able to gain substantial and in-depth understanding and perception of the telecom professionals on embedded innovation challenges, trends and motives. Moreover, the research has mainly adopted this approach in order to have a great comprehension on the extent embedded innovation can improve telecommunication services in Jordan.

TerreBlanche & Durrheim (1999) have defined research paradigm as a philosophy and comprehensive system of various interconnected research practices that describe the nature of investigation along three important methodological components, i-e., ontology, epistemology, and methodology. It is a reflection of overall research culture comprising beliefs, values and assumptions held by researchers regarding the nature of research (TerreBlanche & Durrheim, 1999). The concept of research paradigm encompasses a framework of understanding, beliefs and perception of various theories entailing methods and philosophies. Hence, according to Johnson and Christensen (2010), the research paradigm will allow the researcher to explain all assumptions built during the course of study. However, it is important to note that researcher's knowledge and thinking about the subject significantly influences the research paradigm with regards to tools and methods deployed in the study.The next section will explain the chosen research paradigm and will provide a detailed justification for it.

Interpretive research paradigm.

This research aims to highlight the challenges being faced by Jordanian telecom organisations and assess their perceptions towards embedded innovation for the accomplishment of business objectives in a highly-saturated market. In doing so the researcher will explore the mechanism and processes to build a system for embedded innovation. Hence, the current research has chosen the qualitative research approach. So, out of two main research paradigms, i-e, positivism and interpretivism, the research paradigm that complements the qualitative study nature is interpretivism. The positivist approach attempts to apply methods and principle of natural science to examine the social behaviour of participants by comprehending and explaining reality (Bates, & Khasawneh, 2004). Positivism heavily relies on scientific principles and method to gain insight and knowledge during the study. It doesn't allow the subjective interpretation of reality and offers results on logical grounds, under restrictive interpretation (Denzin & Lincoln, 2011). On the other hand, interpretivism

attempts to understand social behaviour of participants from the participants stand and interpret the meaning through the participants view the world (Bates, & Khasawneh, 2004). It underpins the belief that reality is socially constructed rather than influenced and determined by external forces. Hence participants' experience and mind-set ought to be understood. For instance, this research study will attempt to understand the perceptions of respondents (in this case, it will be the managerial staff of Jordanian telecom organisations) regarding the embedded innovation. Moreover, the study will investigate the experiences of telecom managers to identify factors that facilitate or hinder the innovation process within the organisation. The approach will enable the researcher to understand how participants make sense of their own experiences and recognise the process of interpretation.

In order to assess the perceptions of telecom professionals regarding embedded innovation in Jordan and investigate the motives, challenges, and processes of embedded innovation in the Jordanian telecoms market, the interpretive approach will guide the researcher to conduct an in-depth investigation, identify explicit as well as implicit factors that shape the perception and affect the motives and base the findings on subjective, yet informed interpretation. Viewpoints of managerial staff of Jordanian telecom organisations will be presented in the form of various themes. An effective compare and contrast of qualitatively generated themes will answer the study's research questions.

Justification for the chosen paradigm

In order to provide the justification for chosen research paradigm, the researcher will compare positivist and interpretive research approaches in the context of underlying research. In the positivism approach, the researcher believes in the use of highly structure empirical testing of hypothesis, facts and statistical analysis to determine relationships between variables. No allowance for human interpretations is given in the positivist approach. Variables must be quantified in a way that they can be statistically observed. If a researcher will choose positivist research paradigm, the quantitative survey will produce limited information and would restrict the researcher's ability to explore and understand the participants' experiences. On the other hand, the interpretive approach will enable the researcher to conduct in-depth interviews to investigate social occurrences like behaviours, experiences, and attitudes (Dawson, 2002; Malterud, 2001).

The main justification for choosing the interpretive research paradigm is that it allows the researcher to fully explore the phenomenon and extract in-depth insights without imposing any methodological restriction. The questions of why and how directed to the participants cannot be fully answered through positivist approach due to interpretive restrictions. Hence, the most suitable approach to answer such questions is interpretivism. The phenomenology although time consuming and hectic to analyse compared to positivism is appropriate to this research study which is qualitative in nature (Bogers, 2011). Under the guidance of interpretive research paradigm, the researcher will be able to gain substantial and in-depth understanding and perception of the telecom professionals on embedded innovation challenges, trends and motives. Moreover, the research has mainly adopted this approach in order to have a great comprehension on the extent embedded innovation can improve telecommunication services in Jordan.

Research Approach

In academic research, researchers can choose between two research approaches that is quantitative and qualitative. Qualitative research focuses on feelings, opinions, perceptions and experiences of respondents. Stating differently, this research approach discovers the reality, significance and tenacity (Creswell, 2013). Qualitative research approach is interpretive and emphasises on in-depth comprehension of underlying phenomenon (Saunders et al., 2014). The researcher adopts a qualitative approach when the aim of study is to decode, translate, describe and agree with the meaning rather than frequency of certain naturally occurring phenomena in the social context. In case of current research, the interpretive perspective will explore the embedded innovation influence on telecommunication services and it would be an appropriate approach in which experiences and perceptions of telecom managerial staff could be examined and evaluated. Furthermore, qualitative approach facilitates the researcher to concentrate on understanding what is happening in the context of a specific phenomenon and further enhance interpretation of data. Therefore, to examine the extent to which embedded innovation can improve the telecommunication services in Jordan market; the research will collect the qualitative insights from telecom organisations and the clients using the telecommunication services.

Recognising the diversity of underlying phenomenon, the researcher has decided to adopt the qualitative research technique to extract in-depth and meaningful insights from respondents. Moreover, the successful accomplishment of research objectives requires input from various sources. Hence, the researcher will adopt a multimethod qualitative approach where data will be collected from the ministry of telecoms staff, middle and senior management of telecom companies and Jordanian customers.

Moreover, the researcher will also adopt multiple case-study approaches to conducting an organisation specific in-depth investigation of three telecom organisations selected for the research. An effective comparison and contrast of these organisations will determine their levels of adoption on embedded innovation and how this has influenced their service innovation.

The justification for selecting the multimethod approach is that when different research methods are combined to explore an underlying phenomenon, they generate more reliable and richer results (Mingers, 2001). Single research methods have their drawbacks and advantages but when different research methods are appropriately combined, it enables the researcher to minimise the limitations and maximise the advantages providing results with higher accuracy.

4.2 Stakeholder Analysis

The research mainly investigates the perceptions and motives of telecom professionals regarding embedded innovation and challenges faced by them in its integration. The research assesses "***the extent to which innovation can improve the telecommunication services in the Jordanian market***". Hence, the target sample (see table 1) was planned to involve the telecom companies who are the core providers of telecommunication service in Jordan. The data will be collected from managerial staff of selected organizations Interviewees included senior managers and chief executives of the telecommunication companies in Jordan. In order to get informed and meaningful insights, the researcher set the criteria of experienced and senior practicing managers in telecommunication services for target audience. The targeted interviews represented all major network telecommunication operators in the Jordan's market thus providing different opinions and experience related to telecommunication embedded innovation. The entire population was able to be represented by limited number of players

due to the nature of telecommunication industry in Jordan, thus potentially avoiding errors of bias and making the research outcomes more acceptable.

The unit of analysis is considered as the major entities which are being analysed within the study. In the research, the typical unit of analysis is comprised of individuals, social organisation and social groups. Furthermore, this study has also adopted the unit of analysis approach for addressing the trends and challenges about embedded innovation in the Jordanian telecommunication sector.

I will put a table here

4.2.1   Data Collection

The researcher will collect the data from different information sources to validate the research. Semi-structured interviewing approach will be used to collect the data and rationale for choosing semi-structured approach is that it allows the researcher to use the probing technique while maintaining an overall structure. Interviews will be conducted with senior management of each selected organisation. For this purpose, researcher plans to interview branch manager, chief operating officer and chief strategy and business development.

The reason for interviewing these three persons is that they could share important strategic information about how their organisation is integrating the embedded innovation and what is the impact upon overall service innovation. Information from this source will be highly valuable for the execution of this research as it will identify the strategic priorities of organisation with regards to embedded innovation. Each interview will last for 40 to 45 minutes.

As three organisations have been selected, therefore, researcher will conduct nine interviews from three organisations. The researcher will also interview the ministry of telecom representatives and Telecoms director in the ministry of trade. The reason for choosing this information source is that they will offer meaningful insights related to governmental support for information access to laws, employability index, up-to-date vat and tax rate and other procedural factors to sustain in the host nation. After conducting the semi-structured interviews, the researcher will conduct focus-group discussions with the middle and operational management to explore the operational policies for multinational telecoms firms. For this purpose, 3 focus groups will be conducted in each organisation. Each focus group

would last for approximately 1.5 hours. Operational manager, research and development manager, marketing manager, finance manager, customer relationship manager and two existing end users will be included to execute the focus group.

The reason for selecting focus groups is related to the fact that it will help the researcher in investigation complex behaviour of the participants. Moreover, the selection of focus group will help in getting key information from the participants of the research and further help in discovering about the different set of people think and feel about recent trends and challenges which are the part of telecommunication industry of Jordan. In addition to the above statement, the focus groups help the researcher in obtaining detailed information about the group's perception and opinions regarding the Jordanian telecommunication industry and how the companies are performing. Moreover, the key information will be derived from the research participants who will help in providing a broader range of insights about the feelings related to trends and challenges associated with the telecommunication industry of Jordan.

The reason for including these individuals is that they will jointly offer a holistic view by sharing important information related to various business aspects. For instance, finance manager will be able to discuss resource constraints and costs associated with embedded innovation that make the integration process challenging, marketing manager will be able to discuss the marketing related issues that hinder the embedded innovation, research and development manager might share important knowledge that could be used to facilitate the integration of embedded innovation within the organisation. Lastly, knowledge from customers is always considered a valuable resource for organisations. End users can offer useful insights to their organisations for enhancing the innovation process.

4.2.2 Sampling Technique

The researcher has selected the non-probability sampling to draw the required number of respondents. The Purposive sampling is a form of non-probability sampling and also is called judgement sampling, where individuals are selected with a specific purpose in mind.Purposive sampling technique allows the researcher to draw respondents with specific characteristics and also it's the most practical approach for exploratory studies (Saunders,

Lewis & Thornhill, 2012). Purposive Sampling was utilised to select participants, in this case, interviewees would be selected based on their managerial position and experience with the organisation. Similarly, government officials would be selected based on their representative position, more specifically innovation managers participants will reflect the other side of embedded innovation. However in this case the sample was relatively large and the interviewees were selected on most informative basis.Research & Development (R&D) Manager's and senior management level staff were chosen based on their highly knowledge of the innovation, years of experience, nationality and the sources of their innovative activity. Senior managers were interviewed in Zain mobile company and R&D make up a significant ratio of the entire sample. The participants have a good understanding of the organisation practices, process of innovation,innovation implementations. R&D managers are responsible for the service innovation development. The researcher set the criteria that only senior experienced managers that are directly involved in the key strategic and operational activities will be interviewed. In underlying case, the researcher intends to explore the insights from management, customers and policy makers. For the pilot study, the researcher only considered the management of Jordanian telecom organisations. The purposive sampling allowed the researcher to collect data from senior manager working in the research and development. The senior innovation operational manager, and telecom company manager who can offer the useful insights in this regard. The researcher selected Zain mobile telecom out of three Zain, Orange and Umnia. Zain was selected for being the first and leading in Jordan, after specifying the criteria, the study used quota sampling technique to select the final sample size for this research. The researcher set following criteria to set the quota: firstly, the manager would have spent at least 10 years in the telecom industry and secondly, the manager will be native Jordanian as she/he will have greater understanding of the local Jordanian telecom market and latest information about the innovation exchange issues being faced by the Jordanian firms (Mason, 2010). With the help of purposive sampling technique, the researcher identified that on average there were 37 managers in three organisations that filled the pre-set criteria of relevant experience and seniority. To conduct the pilot study, the researcher further refined this size by employing the quota sampling technique as the sample is very large. The native Jordanian telecom managers working in the R&D department with ten years of industry experience brought the sample size down to three out of five managers, the researcher conducted the pilot study interviews with only 3 managers from Zain. Accessing participants needed a lot of effort, the researcher had travelled to Jordan and conducted the snowball sampling first and proved to be ineffective at the start of the study as

none of the participant referred to specific departments or firm. The researcher used various techniques to gain access to the sample such as personal connections and previous colleagues who are involved in innovation and proved the most fruitful.The pilot consisted 3 managers 1 – on 1 with the research & development, innovation operational manager and division head. Before the start of the interview the researcher introduced himself and explained the purpose of the interview and explained the term imbedded innovation. The following table provide participants analysis

Interviews Participant table:

Organisation	Participants Names	Years of Experience	Position	Justification
Zain Telecom	George Hana	1 6	TelecomManager	Useful insights and deep understanding of internal & external management challenges.
Zain Telecom	Sami Qawar	1 1	Operational Manager	highly knowledge of the innovation
Zain Telecom	Sarah Abdu	10/6 months	R & D	Service innovation development

Semi-structured interviewing technique was adopted to extract the important insights. Next section will explain the key interview findings obtained during the interview:

Chapter 5.　　Results and Conclusion

5.1.1Pilot study

For Most quantitative research, employs pilot study to test questionnaire is more often recommended, however the use of pilot study not exclusively used in the positivist research, also qualitative research can benefit from pilot studies. The underlying study conducted three semi-structured interviews with managers from, Zain. Each interview had an average duration of 50 minutes. The researcher asked the respondents to discuss the current challenges they face while ensuring the profitability and sustainability in a hypercompetitive environment. The respondents mentioned that the lack of innovation and unwillingness of

management to invest in innovative activities due to unclear return on investment is one of the biggest challenge. Moreover, the government's unfriendly policies are further hampering the profitability of firms, making the survival difficult in an already financially constrained scenario. The respondents specifically mentioned the recent increase in the tax rate that has badly affected the financial position of key telecom players, due to which the investment in the innovative activities has become more challenging. Despite the huge potential of Jordanian telecom market, the top management doesn't have any vision for embedding the innovation. Other challenges commonly discussed by the participants were lack of innovation labs, government restrictions, high tax rates and lack of collaboration with key stakeholders.The respondents mentioned that other than the external environmental issues, the Jordanian telecom organisation also face the internal resistance and to some extent, prefer to collaborate with the stakeholders by employing traditional collaboration techniques. Moreover, when they were asked about their readiness to operate in an environment characterised by high inside out and high outside in knowledge flow, the respondents commented that current organisational structure and policies might resist while functioning in such environment, and other than external environment, major transformations in the internal organisational environment are also required to overcome the structural resistance.

5.1.2 Appropriateness

A sample of the R&D manager, Innovation operational manager and Telecom Company Manager were interviewed to highlight and explore the challenges to a depth of understanding and authenticity. The research questions attempted to explain the current environment of the Jordanian telecom industry in terms of innovation challenges, embedded innovation opportunities and to what extent they collaborate with the community, relatively under the research area. Semi structured interviews were conducted with the involvement of the managers mentioned above, that were highly appropriate for the research. Sanders (1982) stated for organisational research, three to six individual interviews are sufficient.

5.1.3 Interview outline

Participants were asked to answer the following questions:

Job Position:

Duration of time working at Zain:

Duration of time working in the industry:

Years of experience in the telecoms industry:

The researcher used this interview outline to share the pilot study results. The interview guide was used with flexibility to enable the use of probing strategy during the discussion, which means that the structure was not strictly followed.

1) How will you explain the current environment of Jordanian telecom industry in terms of innovation and creativity?

2) What opportunities you think innovation embeddedness can offer to the Jordanian telecom organisations?

3) What do you think of the innovative collaboration with the community and stakeholders can create a shared value for business as well as society?

4) What are the internal challenges faced by the Jordanian telecom organisations while embedding the innovation within business processes?

5) What are the external challenges faced by the Jordanian telecom organisations while embedding the innovation within business processes?

6) How the above mentioned internal and external challenges can be tackled?

7) Tell me about the governmental support and non-governmental support in adopting the innovative business practices?

8) To what extent you think the governments and non-government support, rigid regulations are responsible for lack of innovation?

9) Your organisations is willing to openly collaborate with the external innovation providers and operate in an innovation embedded environment with high outside in and high inside out knowledge flow?

10) What value do you think the innovative collaboration with the external environmental actors can bring to organisations? To community?

11) Overall, can you suggest a few recommendations to improve the current innovation issues of Jordanian telecom industry? Which immediate remedial steps need to be taken in this regard?

2.1.4 Practical contribution:

The key findings of this thesis can be of benefit to 60% of the community in Jordan and in terms of customised products and services as well as helping with unemployment problems which help make use of the skilful market and will also help attract investors to Jordan within the telecommunication industry and information communication technology (ICT) . This will help practitioners as well as those who are in the field of consultancy, who are in charge of the service and product innovation. Also, it will enable them to develop a better understanding of what factors could possibly be an obstacle and a driving factor to both success and failure analysis, in which it helps them to move forward with a better awareness of the major challenges, issues, barriers and obtain superior positions and to be more competitve in the challenging business environment. The study aims to develop a collaboration framework between the mobile telecoms in Jordan and some TV channel stations in order to provide customers TVs channels, sport, film channels like how they do perform in the United Kingdom.

5.1.6 Theoretical Contribution:

The result is expected to fill the gap in Embedded Innovation EI theory and how it can be implemented, managed and accepted by stakeholders. It offers a deep understanding of how EI theory can be tailored to skilled based industry such as telecommunication and to a developing context such as Jordan. Our study will highlight the context related issues that could be changed to fit the developing context and then replicated in similar countries in the MENA region. Also another major contribution for this research is to draw a conclusion into a framework presenting the critical success factors and other pre-requisites essential for multi case analysis, in which the ingredients of this proposed framework were taken from in-depth data collection used specifically for this empirical study.

5.1.7 Potential publication:

There is a possibility of giving my research findings a wide publication in policy research journals.

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