Aalto University
School of Economics

Applying cross-functional teams in the service innovation process

Marketing

Master's thesis

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ABSTRACT
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Research objective

This study seeks to find out the ways in which the application of cross-functional teams differs between companies creating their revenue through selling physical products and those focused on the service side of the high-technology market – the former having received significant attention in existing academic literature, whereas the latter has received virtually none.

Research method

For the study, a theoretical background was collected from existing marketing, innovation and cross-functional teams literature, namely articles and other publications in the respective academic streams. In addition, qualitative research in the form of semi-structured personal interviews was conducted among personnel working in the functions and organizational levels most current to the case company's innovation process, in order to facilitate real life reflections on the information discovered through the review of previous literature.

Findings

Although a valued practice, the applicability of cross-functional teams in the studied telecom SME environment differs greatly from that evident in manufacturing industries. The most critical differences were found in the low availability of human resources, as well as the natural occurrence of cross-functional information transfer in the case organization, both reducing the value of fixed cross-functional teams.

Keywords: new service development, cross-functional teams, innovation, service management

Contents

1 Introduction

Research background

As high-technology products are becoming more and more everyday items in modern world, they also create demand for high-technology services (Official Statistics of Finland, 2011). One of the most critical fields in which the usage of a given instrument is particularly dependent on related services is telecommunications (telecom) industry; cellular phones, Internet and other means of communications do not work on their own, but require a rather complex infrastructure to support the inherent functions and allow the physical products to deliver value to the customers. (Cheng et al., 2003)

A number of authors (e.g. Griffin & Hauser, 1992; Menon, Jaworski & Kohli, 1997; Xie, Song & Stringfellow, 2003) identify interdepartmental communication as one of the main factors in creating success for new product innovation and market introduction. For this reason, it is imperative for managers of companies operating within high-technology markets to understand the relational dependence of marketing, R&D and product development teams on one another, and how it affects a company's business performance.

Furthermore, as service marketing involves not only the four P's typically linked to physical product marketing – namely product, price, place, promotion – but also people, physical evidence and process (see Zeithaml et al, 2006), the optimal group composition in terms of cross-functional efforts can vary quite a bit between said physical products and related services. Therefore it is also of great importance to gain greater in-depth knowledge regarding the difference which exists in cross-functional teaming between companies providing physical goods and those focusing on value creation through services.

Previous research and research gap

One of the main shortcomings of academic literature relating to cross-functional teaming is that while the topic received vast attention in the 1980's and early 1990's, it did not get much attention between 1992 and 2005. Although not a particularly long period for a topic to be out of fashion, this period coincided with a drastic change in not only the amount of technology available to companies and individuals alike, but also the number of ways in

which these technological leaps could be transformed into applications in what is often considered the modern everyday life (see e.g. Lucky, 2004). One of the key ways in which technology and its role in the everyday life of people and companies was the leaps made in terms of communication technology; both in terms of its portability and availability to organizations and individuals alike: Whereas until 1990s, telecommunications were conducted through stationary terminal devices such as landline telephones and fax machines and between only two simultaneous participants, the 1990s saw the introduction of both Global System for Mobile Communications (GSM) and Internet to the individual consumers, the introduction years in Finland being 1991 and 1993, respectively. (Wikipedia)

This situation has been improving in recent years, yet there are still aspects to the issue which can and should be discussed in much greater detail without much risk of the discussion becoming repetitive in nature. As McDonough (2003) argues, CFTs are commonly recognized as a key organizational tool for new product development, yet it is unclear as to why and in which conditions they should be applied; their functionality may depend on the particular circumstances and contexts within a situation, or they may be applicable to a variety of contexts but may still fail due to an organization's internal infrastructure.

Also, as Menon et al. (1997) point out, there are several ways through which interdepartmental interactions can be improved – cross-functional team implementation being only one thereof. Other examples include: Implementing less risk-averse management practices; Decentralizing power within the organization; and developing market-based reward structures. While cross-functional teams can be considered to tackle all of the above at once, its real life applicability in the case setting is has thus far been researched to a highly limited extent.

One of these aspects is that of service oriented companies basing their operations on high-technology innovations. Almost all of the discussion thus far has been revolving around the aspect of physical product creation (see for example; Nakata & Im, 2010; Park et al. (2009); Song et al. (2010). However, as services are becoming an increasingly important co-product for the physical high-technology innovations, there needs to be meaningful research conducted from the service perspective as well. The purpose of this study is to find out the ways in which cross-functional communication and collaboration as

a tool for creating competitive advantage could be transferred to companies operating in the service end of the industry.

In order to gain upper hand on their competitors, companies operating in high-technology oriented markets must be able to create sustainable competitive advantages by either providing the marketplace with radically new innovations or improved versions of those products already offered to that marketplace. Although a simple concept as such, there are several aspects which make this much more difficult an operation than one might assume.

The research problem for this study also bounds from these differences between the two types of innovation: Service-oriented companies operating in high-technology business fields must be able to offer their customers the most effective ways for solving everyday issues, but also keep the level of innovation at what could be described as moderate in order to reduce customer fatigue – resulting from having to constantly learn new ways of performing those very tasks – in order to retain customer satisfaction and customer loyalty.

Research questions

In this Master's Thesis I work towards establishing a theoretical bridge between physical products and services as they relate to the concept of cross-functional teams and inter-organizational co-operation.

The main research question of this Master's Thesis is:

What are the specific challenges – and advantages – to be taken into consideration when seeking to implement cross-functional teams practice into a relatively small ITC service business context?

Most importantly, focus will be directed towards finding out whether it is more effective to favor small groups entailing the most qualified experts of each individual field or if the main focus regarding the aforementioned decision should be in individuals' ability to work with professionals with different backgrounds, and from different functional units within the same parent organization.

The sub-questions answered in the Thesis are:

1. Should the customer be considered an active participant in the product/service development process and as such be represented as a ‘function’ and a NPD resource of the organization?
2. When operating within an SME setting, should cross-functional teams be approached from a different viewpoint than when considering larger corporations?

Secondly, the author will introduce some background reasoning for the selection process concerning the people assigned from their respective native departments into these cross-functional units.

The study will proceed by first identifying the specific ways in which service marketing and management are shown to differ from their manufacturing versions by existing literature. On this basis the author will then build discussion on the specifics of innovation development and management both as a general subject as well as a service-specific phenomenon, and thereafter discuss cross-functional cooperation in a similar fashion and structure. These findings will be then be reflected upon what will be found out during interviews with cross-functional team personnel in the case company, thus building a bridge between previous literature and an up-to-date, albeit case-specific, practical perspective.

Given the limited amount of time and financial resources inherent to similar studies, this thesis will discuss the issue of cross-functional teams only within the scope of a single company within a single market. While this perspective is discussed to the greatest detail possible, it should be noted that different cultural factors in both intra- as well as extra-organizational terms may show equally varying end results to be valid.

Further discussion and suggestions for additional research can be found at the end of the study.

2 Service and innovation management

This section will selectively review literature on service and innovation management, identify the key discussions and contributions, and link these findings with one another as well as the research problem at hand. The section is divided into three sections (Service management and marketing; Innovation management; and New service development) each of which will build on the basis laid by, and discuss a topic more quintessential to the research objectives of this study than, its preceding sections.

2.1 Service management and marketing

Compared to the marketing of physical goods, service marketing is generally agreed to be a more complex process due to their intangibility, human involvement-caused heterogeneity, the simultaneity of their production and consumption, and their inherently perishable nature (Martin, 2012, 5-6). Still, as Hart and Service (1993) point out, services as a source of business have been researched to a much smaller extent than manufacturing industries. Here the author provides a general description on the special attributes of management and marketing as functions within service business concept – that is, on the most significant changes company management and marketing functions face when translated from manufacturing companies to service oriented companies.

Service management

Grönroos (1994, 6) defines service management to involve the company management's capacity to:

1. *understand the utility customers receive by consuming or using the offerings of the organization and how services alone or together with physical goods or other kinds of tangibles contribute to this utility, that is, to understand how total quality is perceived in customer relationships, and how it changes over time;*
2. *understand how the organization (personnel, technology and physical resource s, systems and customers) will be able to produce and deliver this utility or quality;*
3. *understand how the organization should be developed and managed so that the intended utility or quality is achieved; and*
4. *make the organization function so that this utility or quality is achieved and the objectives of the parties involved (the organization, the customers, other parties, the society, etc.) are met*

Grönroos (1994) approaches the management of service business through the concept of profitability: As customer retention increases profitability, service companies should focus on [constantly] re-designing their services and particularly their delivery to the customers in

a way that keeps customer orientation and value added in focus. Through such activity, companies can increase core product value to the customer, and thereby increase customer satisfaction –and, consequently, retention – rates, which will have a positive effect on company profitability.

A great tool for managing the service delivery process is to apply a service blueprint (Shostack, 1984). Service blueprints are tools which allow the service provider to map out all the necessary service points and set acceptable resource limits for the completion of each individual point – taking into consideration all the activities, both those visible to the customer as well as those not seen by them. In general, as services are non-storable and subject to immediate consumption, one should make sure all the points in a service creation process are mapped out so as to be able to evaluate their performance, as well. As the author duly notes:

> *Even though services fail because of human incompetence, drawing a bead on this target obscures the underlying cause: the lack of systematic method for design and control.*

Furthermore, Frei (2008) argues that as a service, by definition, cannot be delivered only in part, a company does not have the luxury of failing to deliver any of the aspects of its service. Therefore it can, per the author, be argued that service excellence can be defined by the things a company chooses *not to do well*. Of course, the decisions between what a service provider chooses to excel in, and where it chooses to save resources in order to be able to deliver excellent service at all, should be made on the basis of customer needs.

Services marketing

The notion of service being an inseparable part of any product delivery was introduced already several decades ago. For example, Hutchison & Stolle (1968) noted that the current trend in the late 1960s was that customers expected service to be part of whatever they bought just as much as product's quality, design and price were considered to be.

As services, by definition, are both produced and consumed at the same time, there are several differences in which they should be marketed in comparison to physical products. One of the key differences is that, the marketing of services should take advantage of relationship marketing to a very high extent and the service should, to as high a degree as

possible, customized to suit the needs and desires of an individual customer (Kinard & Capella, 2006). As Kinard and Capella (2006) argue, however, the ability of a service provider to customize their offering to the particular needs of a customer requires that customer to be willing to share very specific information with the company in question.

As Gremler et al. (1994) note, the service encounter alone may in fact play a critical role in determining a company's customer satisfaction level. In order to provide insight to the process which should take place in cases of service failure, the authors present a blueprint for the failure management effort:

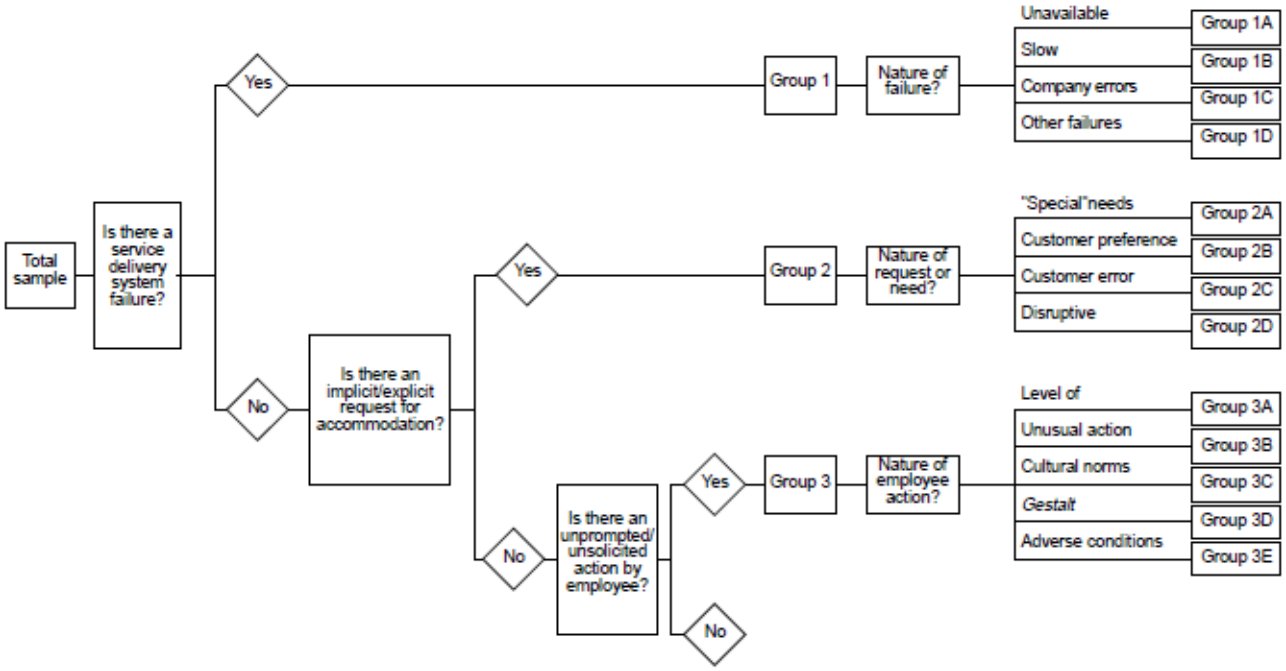

Figure 1 - Blueprint for incident-sorting process (Gremler & Bitner, 1994, 41)

Although the research by Gremler et al. was conducted within the banking sector alone, the results appear to be highly transferable to other service industries, as well: The diagram goes through three steps of questions, each with a yes/no answer option and a continuation question in either case. The three main questions are: Is there a service delivery system failure?; Is there an implicit/explicit request for accommodation?; and Is there an unprompted/unsolicited action by employee? – each 'Yes' answer followed by a more deeply probing question: Nature of failure?; Nature of request or need?; and Nature of employee action?, respectively.

2.2 Innovation management

This section also gives a general overview on the key issues relating to the management of innovations within an organization. It will also form the basis for the analysis and evaluation of cross-functional teams applicability to service businesses, as opposed to manufacturing business, by providing a solid foundation on the understanding of innovations as an organizational feature of their own, independent of case-specific organizational context.

In this literature one can identify three separate, albeit related streams of study, each focusing on a unique aspect to innovation management and by doing so answer the following questions:

- What is innovation?
- What are the most general benefits and challenges associated with innovations?
- How can innovations be best transformed into a competitive advantage, as opposed to disadvantage?

In this chapter, the author will provide a review of the aforementioned streams, starting with a definition and characteristics of innovations, them moving on their benefits to an organization, as well as the challenges associated with them, and finally discussing innovation as a defining factor for company success.

Innovation – characteristics, benefits, and challenges

Pires et al. (2008), speak of innovation as being a product or service introduced as new to the organization itself or a continuous and/or incremental enhancement introduced to an existing product, service or process. However, in her work several years earlier, Brentani (2001) presents a somewhat broader definition of innovation, which examines discussing– the newness of a product or service created as being possible to assess either in terms of new-to-the-firm or new-to-the-market, and positioned on a two-dimensional scale, as shown by Figure 2:

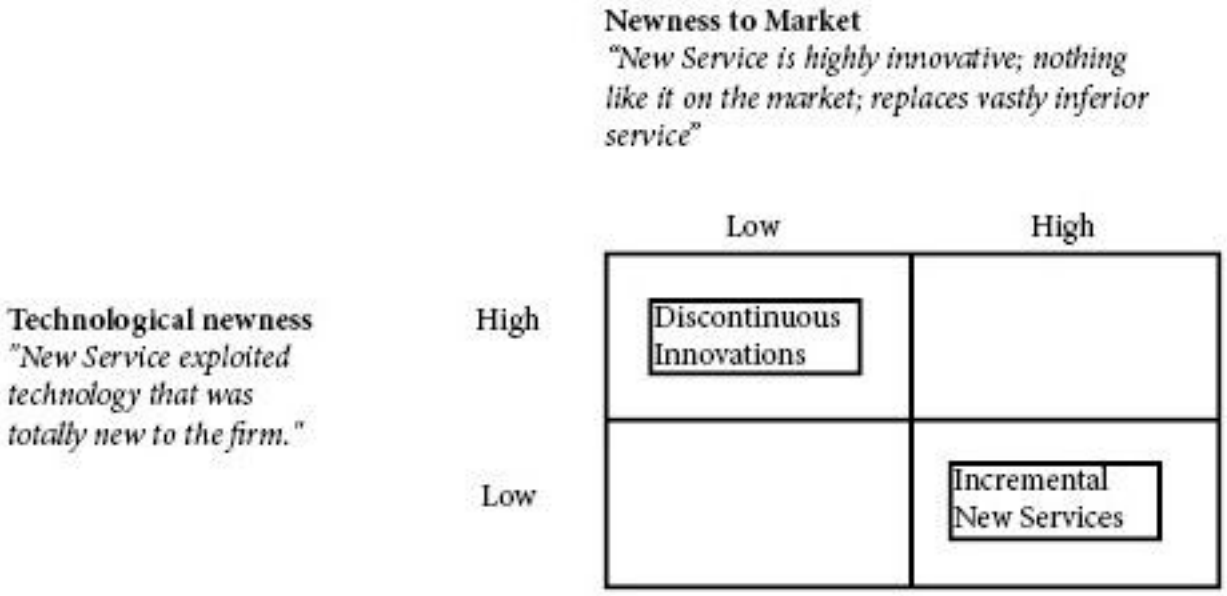

Figure 2 Dimensions of innovation (Brentani (2001. 171)

Judging an individual innovation on the basis of the two-dimensional scale described above, it can be positioned into one of two rough categories; Discontinuous – or radical – innovations and continuous – or incremental – innovations.

As the new product/service development literature, including that of Brentani (2001), provides a number of definitions for radical and incremental innovations, it should be said that the author of this study will discuss the two based on the following definitions of the two terms (Merriam-Webster, 2004):

1. The first implies a '*slight, often barely perceptiple augmentation*', which in terms of new technology can be interpreted as prolonging the natural life span of an existing product by introducing a new feature to it. By definition, this feature cannot drastically change the products key functions or the way in which they are applied to respective situations, but to simply offer a way in which the existing functions can be performed either more effectively, efficiently or both.
2. The second, on the other hand, can be described to be '*favoring or effecting fundamental or revolutionary changes in current practices, conditions, or institutions*'. In other words, creating either a completely new way of performing an existing function or a completely new way in which an existing application can be used.

The division of innovations into these two categories is imperative when considering innovations from an organization's strategic point of view; it provides decision makers with far more specific points to consider than could be addressed if innovation was discussed as a generic field of new market possibilities. It is also worth noting that the impact on a company's productivity is significantly stronger for new to market products (Masso & Vahter, 2011).

Schumpeter (1943) brings up the challenge faced by companies making investment decisions. As the author points out, making investment decisions in a rapidly changing marketplace is "like shooting at a target which is not only indistinct, but moving jerkily as well."(Schumpeter (1943), p.88) Continuing, the author points out that while there is no reason for trying to indefinitely conserve obsolete industries, trying to turn such industries around or at least to direct them towards new routes makes perfect sense, as new innovations have the potential to bring down preexisting market structures and lower the unit cost of satisfying a given need within the market in question while actually keeping the prices at a constant. In fact, lowering the cost of delivering a particular solution – while keeping customer prices constant – is identified by the author as a key motive for engagement in innovation.

The research by Gupta and Wilemon (1990) revealed several characteristics on innovation (see Table 1), as an organizational phenomenon, to be of critical significance when seeking to understand the reason for the high amount of new product/service development projects failing – either at the development phase or relatively soon after product/service launch.

The challenging characteristics are here divided into four subcategories: Reasons to accelerate product development; Reasons for product development delays; Team members' major concerns *during* the NPD process; and How functional groups delay the NPD process.

Of reasons for a company to accelerate its product development, two factors were particularly prominent; while increased competition was seen as the number one reason, the rapid changes in technology were a clear-cut runner-up. This is quite worrying, as both of these reasons are, in fact, merely reactive reasons – that is, the key drivers behind enhancing an organization's speed to develop new products did not arise from within the organization, but from competitors and other uncontrollable elements. If a company only

assigns more resources to improving its product development capacity when competition is already doing it, can it ever really gain any competitive advantage of said competition?

The reasons for product development delays, as argued by the authors, were a bit less numerous yet at the same time they shared a much more level perceived importance in comparison to one another. Again, however, the somewhat clear top reason is rather alarming; ‘poor definition of product requirements’. While it may be considered by many to be commonsense to consult one’s customers in regard to what a new product should entail in order to be attractive to the buying demographic, too many organizations in fact do develop products based on sheer technological ability; along the lines of a famous movie quote, ‘If we build it, they will buy it’.

Regarding the major concerns by NPD team members and the role played by functional groups in the delays on NPD processes, the top two reasons in both subcategories are highly similar; in terms of the former, management style and lack of attention to details – in the latter, failure to give NPD program priority and continually changing requirements. All four of these examples are effectively results of organizational culture not being developed towards a more innovation-prone one, and therefore the organization not having the necessary tools in place to provide adequate support and guidance to the new product development team – this can also be attributed to the reactive (instead of proactive) organizational approach toward innovation.

Reasons to accelerate product development	**Reasons for product development delays**
• Increased competition (42%) • Rapid technological changes (29%) • Market demands (11%) • To meet growth objectives (11%) • Shortening of product life cycle (8%) • Senior management pressure (8%) • Emergence of new markets (5%)	• Poor definition of product requirements (71%) • Technological uncertainty (58%) • Lack of senior management support (42%) • Lack of resources (42%) • Poor project management (29%) • Other (20%)

Team members' major concerns during the NPD process	How functional groups delay the NPD process
• Management style (53%) • Lack of attention to details (47%) • Limited support for innovation (32%) • Lack of strategic thinking (18%) • Poor manufacturing facilities (16%)	• Failure to give NPD program priority (58%) • Continually changing requirements (58%) • Poor intergroup relations (34%) • Slow response (26%)

Table 1 Factors in innovation decision-making (Gupta and Wilemon (1990), p.29)

In addition to the rough division by Brentani (2001), Toivonen and Tuominen (2009) describe innovation in a more in-depth fashion as something that is carried into practice, provides benefits to its developer and can be applied to more than one situation – the third criterion being particularly relevant in a service context, while often considered self-evident in manufacturing. Furthermore, the authors make a specific note that newness to the firm should not be included in the dimensions of 'new', as it could be interpreted to include actions where an organization applies into its operations a practice which has already been used in other settings. Therefore it makes sense to only declare newness in a regional or market segment context.

A key issue to keep in mind, when discussing innovations, is the fact that innovations as such do not grant their developer access to monopolistic market status – instead, innovations must not only compete with existing market offerings, but also create their own demand base. Particularly in the case of radical or disruptive innovation, this demand must be developed from ground up, as the product or service offered attends to consumer needs in a way the consumers themselves are perhaps not ready to recognize as necessary. (Schumpeter, 1943)

As Schumpeter (1943, p.98) describes:

> "Frequently, if not in most cases, a going concern does not simply face the question whether or not to adopt a definite new method of product ion that is the best thing out and, in the form immediately available, can be expected to retain that position for some length of time. A new type of machine is in

> general but a link in a chain of improvements and may presently become obsolete. In a case like this it would obviously not be rational to follow the chain link by link regardless of the capital loss to be suffered each time. The real question then is at which link the concern should take action."

Innovation benefits and challenges

What must be taken into consideration when planning for innovation, is the fact that while engaging in technological innovation typically does result in 15-23% increase in productivity (Masso & Vahter, 2011), innovations do not necessarily provide a company with immediate financial benefits. Rather, there might even be a decrease in financial performance initially after new product introduction. Masso and Vahter (2011) see this to be caused by increased costs due to updating production process, and the disruption caused by the new entry to the sales of existing line-up. Furthermore, the authors note that there is high risk for the innovation not being produced efficiently from its introduction, as the efficiency tends to increase in line with the product life cycle.

In many cases, innovation can be the primary driver of a company's success – at times it can even be the precondition for survival. One of the most used examples of the latter 'innovation companies' today is 3M, which bases its whole business on new, seemingly simple innovations which often end up having a significant effect on the way people around the world go about their duties (3M history, www.3m.com). Of the former, 'innovative companies' the Finnish mobile device manufacturer Nokia was an excellent example in the 1990s both in terms of design as well as technological aspects, but has since experienced hardships as it has not been able to provide value to the consumers at a rate high enough to avoid being overtaken by other major players such as Apple and Samsung (Andersen, 2011).

As a single event, innovation happens very often unexpectedly – a key point brought up by the research by Matthing et al. (2004). As their study showed, ideas for new innovations are often triggered by sudden experiences and realizations of how to apply completely new solutions to old problems – or how to apply an existing solution to a new problem.

As an organizational process, on the other hand, innovation must be managed in order to be able to create strong and long-lasting competitive advantages from it. As Masso and

Vahter (2011) point out, increasing the number of innovation objectives will eventually lead to increased number of innovations by the organization in question. What may often limit middle management's ability to encourage and fully support innovation projects is that, while the frequency and the absolute number of innovations is typically identified as a key precondition for company success, as Gupta and Wilemon (1990) found out, their study also revealed that – as long as the numbers remain comparable – exceeding the project's monetary budget is not nearly as significant a determinant of new product development failure as is exceeding the time span allocated for said project.

As identified by Gupta and Wilemon (1990, 38-39), the four most common points of failure in new product development projects are:

1. Lack of senior management support;
2. Lack of early integration of multi-functional expertise into the process;
3. Insufficient availability of relevant resources and their management; and
4. Inexistence of an organizational environment supportive of teamwork.

All of the above are typically symptoms of an organization not being ready to conduct new product development as an organizational function. This can be considered quite appalling, as companies are, however, typically competing within a market environment in which both new and incumbent operators provide customers with new options at varying frequency, and thereby make it virtually impossible for companies to retain their competitiveness without a NPD function of their own.

As argued by Bstieler and Hemmert (2010), in a pursuit for time efficiency, managers should place particular emphasis on clear and engaging direction of inter-functional teams. This is due to the role played in time efficiency by group members' perception of psychological safety which, in turn, is supported by the existence of caring behavior between members from different functions as well as sharing problem solving as an organizational trait.

However, as Table 2 exhibits, there are in fact numerous sub-processes in companies' innovation procedures which need to be solved to facilitate timely innovation launches. While the sub-processes are quite self-explanatory, it is worth making a particular note regarding some of the factors considered difficult by new product development personnel, according to Gupta and Wilemon (1990):

As one can imagine, assessing market potential can be a daunting task, and it poses little challenge to understand its position as the sub-process considered the most difficult one in terms of innovation. However, the two processes mentioned in Table 2 most relevant to the study, 'Managing manufacturing/marketing and marketing/R&D interfaces' could be argued to have gotten surprisingly high scores considering the role of effective information transfer in any organization wishing to develop itself organically.

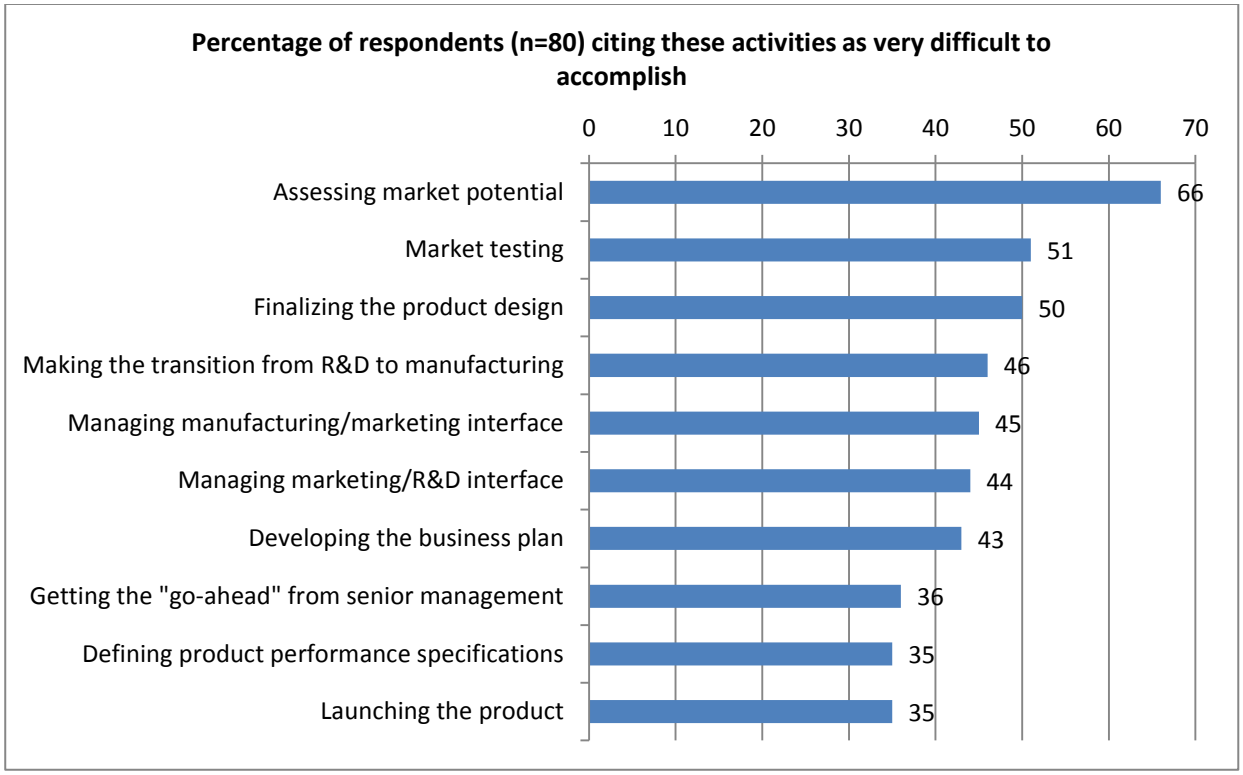

Table 2 Innovation sub-processes (Gupta and Wilemon (1990), p.33)

Pires et al. (2009) argue that human resources are, in regard to virtually all innovation types, one of the key resources [and should hence be considered at the very core planning phase when designing an innovation project]. Continuing with this, Chamberlin et al. (2010) found out that the relationship is, in fact, bilateral; innovative companies are also more likely to actively develop their human resources' capabilities further as well as to actively manage the knowledge situated within the organization – in comparison to their non-innovative competitors. Another case of interesting co-dependencies discovered by the authors is how non-innovative firms tend to prefer physical proximity to their clients, suppliers and venture capital while at the same time these three connection groups are identified to be of key importance to innovative companies.

What becomes a key determinant of new product market performance, then, is the organization's ability to introduce different points of view into its innovation process, as was noted by Edmondson and Nembhard (2009). What the authors found out is that in cases when the different sub-processes cannot be performed in a sequential fashion – as is the usual case in innovation projects – the introduction of cross-functional project teams gains great importance through increased information input, which in turn enables higher product innovativeness and quality and thereby contributes to the organization's competitive advantages.

Innovation processes as competitive advantage

Innovation as a source for competitive advantage was recognized already by Schumpeter (1943), where the author points out the obsolescence of product price as a dominating point of differentiation, and also identifies quality competition and sales effort as substituting factors. Schumpeter also describes the role of new introductions to the market as reducing the scope and importance of practices that promote market stagnation through output restrictions and position conservation, [subsequently increasing the value of additional innovations as source of new competitive advantage].

In their more recent article Chamberlin et al. (2010) found out that maintaining current customer satisfaction was determined as the single most important business success factor, followed by controlling the quality of production and retention of acquired information through knowledge transfer from experienced workers to the less experienced ones.

Quite surprisingly, Brentani (2001) found out that it is not the radical innovations per se which make for the greatest competitive advantages. Rather, a major role is played by the further, incremental innovations produced to keep the original solutions up-to-date. For the purpose of enabling more efficient decision making in the selection phase of the innovation process, Toivonen and Tuominen (2009) introduce five different innovation process types:

1. Internal processes, in which there are no set projects being worked on and innovations come up as a result of happenstance rather than a focused development effort;
2. Internal innovation projects, where the personnel involved are aware of the development objectives, but are often forced to prioritize daily business activities over new product or service development projects – which in turn leads to delayed or even cancelled innovation projects;

3. Innovation projects entailing a pilot customer, where a newly created idea is delivered to a pilot customer thereby employing said customer as a source of criticism and information. This type of projects often also enjoy an extended supply of resources and management, increasing their probability of success;
4. Customer-tailored innovation projects, where the initial request for a solution is derived from a customer and the end result often only serves this particular need – making it less applicable to the majority of market audience and in this way limiting innovation performance; and
5. Externally funded innovation projects, which provide the participating organizations opportunities for co-operation and therefore produce most broadly applicable results, but that are highly scientific by nature, making the development process relatively long and cumbersome.

Regardless of the innovation process, as Song et al. (2010) discovered, having a clear set of objectives for innovation process communicated throughout the executing personnel has a profound effect on innovation performance – particularly in cases where the organizational culture is collectivistic by nature.

While taking the innovation process types above into account, however, one should bear in mind that there is no single model that would absolutely be the best process for every innovating organization. For example, Vence and Trigo (2009) argue that innovation within the three innovation 'patterns' identified in their study – low innovation-intensive; technology-intensive and moderately innovation-intensive; and knowledge and innovation-intensive – differs greatly from one to the other. The main points of separation are identified in their study as the innovative character, intensity of innovation and the level of formalization of innovation, as well as the innovation inputs and innovation co-operation.

Independent of the process applied to innovation development, Masso and Vahter (2011) note that it is an organization's openness to external knowledge within its innovation process, combined with said organization's production levels, which is key to achieving higher innovation output and better general performance. The authors also conclude that the most important dimension of information gathering is the depth of information gathered from a single aspect, rather than the amount of different aspects taken into consideration in the information gathering process – and that the role of different flows of information from within and outside the organization does not greatly vary between manufacturing and service oriented organizations.

In terms of radical versus incremental innovation, as relates to competitive advantage, Georgantzas and Katsamakas (2009) found it better for radical innovators to focus on

growth in terms of profit instead of market share, and to secure the resources needed for said growth as soon as possible in order to prevent disruptions to the innovation curve due to intra-organizational reasons. The authors also see that, while it is important for a market entrant to foresee and prepare for incumbent market operators' reaction to the new market entrant, the entrant should not be overly concerned with it until it becomes a current issue.

A further assessment of incumbent versus new-to-marketplace operators' innovation processes by Pires et al. (2008) also provides evidence on the importance of market knowledge to the success of a new product introduction, giving native market operators a clear competitive advantage over their international competitors in cases where all other factors can be set equal. The authors also note that while size does provide advantages in terms of the absolute number of innovations fostered, being part of a multinational enterprise gives benefits only in cases of process innovation – the effect is actually negative in product innovation efforts.

The results of Pires et al. (2008) are further supported by Nakata and Im (2010) whose study indicates the two most crucial factors in terms of new product performance to be cross-functional integration and market potential, while factors such as technological turbulence and company size have significantly smaller impact on new product performance. Additional evidence is provided by Menon et al. (1997), who identify interdepartmental conflict and connectedness as two major factors affecting product quality; while the correlation between said factors and product quality remains within virtually all business environments, it is at its strongest in highly volatile market environments.

In relatively recent years, the focus of innovation literature has been shifting ever further from its manufacturing base, and towards services as a 'new' business context. As Zhao et al. (2010) notify:

"Nowadays people see much more than manufacturing in innovation, since more and more, not only in numbers, but also in quality, high value added services are integrated into the economy system. The way of doing business has been reconstructed to a large degree due to the appearance and mixing process of these services. Those knowledge intensive business services (abbreviated as KIBS), namely; consulting, financial, education, health, technological agents, information and communication services, etc.; are playing vital roles in the economic system." (ibid, p.2)

For this reason, it is imperative to also study the way in which services are developed as a theoretical entity separate from the dominant, manufacturing literature.

2.3 New service development

As is the case with marketing, most any individual function will have its own variance when applied to a service context rather than a manufacturing one. Even as the best performing service industries are found to be as innovative as the leaders within manufacturing context (Pires et al., 2008), it is highly relevant to study the key differences in innovation projects between service and manufacturing industries.

According to Frei (2008), there are four things must be able to get right in order to retain viability: The company's service offering; its funding mechanism; an employee management system; and a customer management system.

Here, service offering refers to the company being able to not only understand the need of the customers, as is often sufficient in regard to physical products, but more importantly the experiences customers wish to gain from the service. In other words, service managers must be aware of the terms the competition is waged on; longer opening hours, better location, price comparison or the number of options within the service scape available to the customer.

By funding mechanism, the author refers to not only setting the price at a sustainable level, but also forming the payment in such a way that it creates minimal negative connotations to the customer. In addition, operators within rather saturated markets such as the insurance business should have a clear understanding of the key points for incurring costs and in the optimal case invest in a new service aspect which, in fact will lower the overall costs of delivering the service as a whole.

An employee management system is particularly relevant in the service context, as services are characteristically very labor intensive articles to produce. In addition to the traditional hiring and maintaining the best possible skillset to enable best possible service delivery, service companies should invest extra effort in understanding what the factors are behind actually motivating the employees to perform their best. That is to say, instead of designing the service in a way which requires employees to act as service 'heroes' to

maintain a set customer satisfaction level, the design should originate from the idea that even average employees can deliver the service at a very high quality.

Finally, customer management translates into transferring some of the key, or bottleneck, elements of the service delivery process to be handled by the customers. Naturally, customers cannot be assumed to have the same skillset as the actual employees, which requires the elements to be simplified so that it does not require vast understanding of the process as a whole in order for one to be able to perform these sub-tasks. A great example of such customer empowerment, also mentioned by Frei, are airline self check-in terminals reducing a majority of the workload and time allocated to the check-in personnel at the 'traditional' counters.

Particular challenges in service innovation

As Toivonen and Tuominen (2009) found out, service innovation has a number of specific features which cannot be sufficiently understood by applying models developed in manufacturing context as such. Examples of such features, mentioned by the authors, are:

- The highlighted role of the supplier-client interface – important in all types of innovation – in service context;
- The potential for a service innovation process to be born within the practical delivery process – without a conscious and/or well-formulated idea; and
- The difficulty of analyzing the possible 'loci' for service innovations, largely derived from the all-encompassing nature of technical characteristics.

Brentani (2001) identifies two factors with significant effect on new service development performance particularly in cases with high innovativeness levels (i.e. radical innovations): Because radical innovations are often projects with high resource requirements, sufficient market analysis should be conducted to ensure adequate market potential for the innovation; additionally, as services are to a great extent immaterial by nature, tangible evidence should be employed in order to help customers visualize and evaluate radically new market introductions.

Song et al. (2009) depict the key differences between product and service development processes as a service developer's ability to skip the idea screening phase considered essential in creating a new-to-market physical goods and instead focus on enhancing the business and market opportunity analysis, service design, service testing and test marketing. Of these, the idea screening phase was found by the authors to have a positive

relation with proficiency within the following three phases, and therefore arguably the most critical of the four. Surprisingly, being proficient at the business and market analysis phase in fact has a negative impact on service design, testing and test marketing.

On the other hand, Toivonen and Tuominen (2009) point out the difficulty of separating product, process and organizational innovations from one another in service context, as services often entail both the process, as well as the physical aspect to them. The intangible side of service innovations is what subjects them to many new considerations; on one hand, it facilitates much speedier innovation processes – at the same time, however, it also makes it much easier for competition to imitate and reproduce the service [at least to the extent of the visible parts thereof] (Riel et al., 2004). This ease of imitation leads to much shorter periods of time for service innovators to capitalize on their development effort. (Brentani, 2001)

In their study of the Estonian service sector, Masso and Vahter (2011) found out that while highly knowledge-intensive service companies are more likely to engage in innovation projects, they are in fact less efficient in transforming innovation projects into profitable innovations. In general, the authors found out that knowledge-intensive service companies are remarkably inefficient in their attempts to turn R&D and innovation investments into successful process innovations which, in turn, would provide improvements in productivity. The authors explain this inconsistency between propensity and success rate of innovations as follows:

> *There is a strong contrast between lower innovation activities and the higher efficiency of these activities in less-KIS sectors on the one hand, and higher innovation propensity but lower efficiency of innovation investments in KIS sectors on the other. This difference can perhaps be explained as follows. As there is less innovation activity among less-KIS firms, the potential premium in terms of post-innovation profits is higher for a less-KIS firm. The firm can therefore gain temporarily increased (monopoly) profits by innovating, as there are not many competitors in its sector that are capable of similarly investing in innovation and eroding this post-innovation profit of the first innovator. However, innovation activities in KIS sectors are more widespread. Therefore, it is more difficult to gain temporary monopolistic profits from innovating in these sectors. There are many other capable firms in the KIS sectors that*

invest in innovation and can therefore erode the post-innovation profits of previous innovators and competitors.

(Adapted from Masso and Vahter, 2011, 27)

In manufacturing context, particularly new-to-market innovations are commonly field tested several times before launching the end-product. As Gupta and Wilemon (1990) see it, in order to create products which truly suit the needs of the marketplace, companies should not limit their product testing to the end of the development process, but rather include testing as a part of the process throughout its duration.

In more specific terms, the service innovation evaluation process can entail the following three phases suggested by Bettencourt and Ulwick (2008), each relevant at a different phase of the innovation process, but all evidently important for the company/customer understanding

- Definition of the executive step
    1. Identification of the critical tasks which need to be completed in order to solve a particular problem for the customer
- Definition of pre-execution steps
    1. What must precede the execution of the core service function in order to ensure successful carrying-out of the service, in particular:
        - Required definitions and planning before execution
        - Resources to locate or gather before execution
        - Preparations or setups needed before execution
        - Confirmations needed prior to execution
- Definition of post-execution monitor operations
    1. Issues to monitor and verify to ensure successful execution
    2. Issues requiring further modification or adjustment
    3. Mapping out the steps needed for successful project conclusion and preparation for the next process

Continuing the same pattern of thought, Martinez-Gomez et al. (2010) see a company's expansion potential to lie in its ability to connect and create business networks with its connected interest groups; customers, supplies, competitors and other market institutions alike. Quoting Georgantzas and Katsamakas (2009), "In service businesses, cumulative transaction is the most logical determinant of cumulative know-how; in manufacturing, it is cumulative production."

In their research, Martinez-Gomez et al. (2010, 52) state the importance of extra-organizational networks as being significant only when the company exports its products in a relatively low-intensity fashion. More specifically, the authors argue the following:

> *[…] specifically for firms whose main activity corresponds to sectors classified as high or medium-high technology, the likelihood of exporting increases when they hire external R&D services from technology centres. This finding might mean that firms operating with cutting-edge technology developments make ties with technology centres to participate in knowledge networks, which increase the export capability of these firms, all of which is in line with the network approach.*

A company's export activity levels should not be taken as the only determinant of external research centers' applicability to their businesses, however. Pires et al. (2008) found a similar relationship to exist between the feasibility of research center usage and whether the company in question intends to create innovations in terms of products or processes – processes being more dependent on intra-organizational effort. However, the authors note that the use of external research centers in a service business context has a positive effect on innovation probability in terms of both products and processes, and that this effect extends to the respective companies' general tendency to innovate. In terms of the latter, the effect even exceeds that found in manufacturing industries.

Regardless of whether the innovation process is carried out as an intra-organizational project or between external operators, it should be kept in mind that the co-production effort is in any case carried out by individuals and affected by their interpersonal relationships. (Bettencourt et al., 2002) The importance of these personal-level relationships was also found relevant in Riel, Lemmink and Ouwersloot's (2004) study, in which informal communication was found to have a positive effect on a company's short term performance. In terms of long-term performance, the authors found free flow of information and the organization's ability to keep key decision-making managers in touch with selective, up-to-date information to be of significant importance; therefore, the authors suggest companies invest in internal education in order to facilitate expansion and maintenance of organizational knowledge. What is most important is that this knowledge should take into consideration the information gathered from the clients – market orientation being argued by the authors to be of critical importance to the long-term

success of innovation-oriented companies. Informal information flows were found to significantly influence information transfer also by Lawson et al. (2009), who find it much more functional an approach to increasing inter-functional communication than formal communication policies. Still, the authors also found that the development of informal socialization – an indirect prerequisite for effective informal information flows – to be highly dependent on formal socialization; therefore, while taking into consideration the possibility of overdeveloping socialization and knowledge sharing norms and hindering truly innovative idea generation, the importance of managerial intermediation should not be considered unimportant in the formation of cross-functional working patterns.

The importance of information flows was to an extent further solidified by Bessant and Maher (2009) in their study on health care services, where the authors discuss what is called an experience-based system, where the 'touch points' – points at which people come in contact with the particular service – are identified and divided into strong and weak ones on the basis of service performance. The weak ones can then be further developed through the cumulative know-how gathered from all related interest groups; in the case of their study, patients, doctors and hospital administrative staff.

Wood (2009) provides information that is very much consistent with the findings by Martinez-Gomez et al. (2010). The author sees that the success of service-based innovation policies depends greatly on the level of inter-organizational exchanges; the important links including connections with competition as well as with customers. Further, as the new ideas are applied on numerous projects simultaneously, the teachings can be used in other projects and gain cumulative value effects. The importance of continuous improvement and learning-by-doing particularly to service innovation was found significant also by Pires et al. (2008), whose study show it to be of high importance in service companies' process innovation, while entrepreneurship is one of the key determinants of success for pioneer product innovations.

An example of how client co-creation processes, a significant success factor in knowledge-intensive business services (Bettencourt et al., 2002), can be managed can be seen in Figure 3 below:

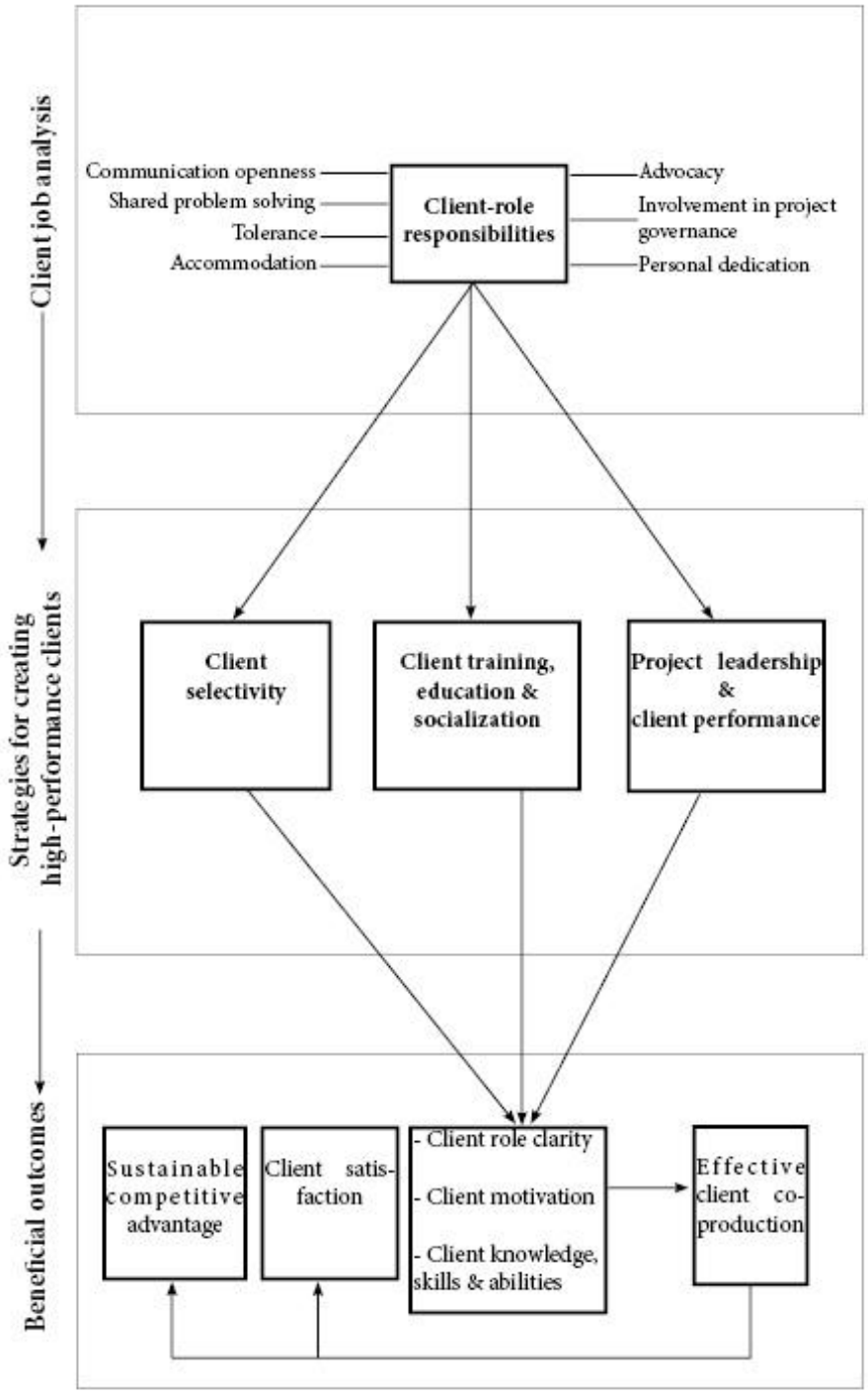

Figure 3 Framework for client co-production management (Bettencourt et al. (2002), 103)

As Matthing et al. (2004) argue, professionals typically responsible for developing services do not have access to customers' environments and latent needs, making it impossible for them to match customer needs at a sufficient level. Therefore the service development suggestions introduced by service development professionals do not match those derived from customers in terms of idea quality.

As the authors (ibid.) point out, managers should employ a proactive strategy in their effort to develop new services, and involve customers early in the development process; through this early involvement, service companies can enable greater organizational learning and thereby reduce the risk of being imitated and surpassed by their competitors. As services are commonly perceived as ideas, customers should be encouraged to contribute knowledge, skills and experiences to the new service development process as well as to share their perceptions of the problem and expectations for the solution thereto.

The importance of customers as a source for innovation in knowledge-intensive service environments is emphasized in the study by Vence and Trigo (2009), where the authors found out that while most service sub-sectors gain most of their innovation-inducing information from the supplier side of their supply chains – and consider clients as an external source of knowledge, knowledge-intensive businesses employ their clients in a key information provider role throughout the innovation process.

Lawson et al. (2009) also include extra-organizational sources such as schools and other parties relevant to a company's operations to the list of potential sources of external knowledge. The authors see increased number of knowledge sources as a pre-determinant factor to high levels of knowledge transfer beyond company boundaries – which, in turn is one of the key factors in effective new product development. Being able to efficiently develop new products is, per authors, key to competitiveness as the growth of inter-organizational networks has increased R&D costs, product complexity, the level of difficulty as relates to technological change management, and the amount of resources and knowledge required in innovation development – at the same time reducing product life cycles.

However, when a company innovates mainly in terms of processes and not services themselves, the situation is largely different. As Pires et al. (2008) depict, extramural R&D (R&D effort performed outside an organization's boundaries) is much more applicable to the development of end-customer products and services, while its applicability in process

innovation context is much more limited – presumably due to the fact that process innovations bound from company internal aspects which are intrinsic by nature. Therefore outsourcing even part of the development process might be difficult. On the other hand, the authors noticed that it is beneficial for a company to be part of a multinational group particularly when it comes to process innovations; the effect is entirely opposite for product innovations.

Regarding the roles played by different knowledge flows both from within as well as outside the organization, Masso and Vahter (2011) found there to be high similarity between manufacturing and service sectors. The most radical of differences between the two extremes is, per authors, that in service context the intensity of knowledge sourcing (i.e., how thoroughly an individual source is studied) has a much more significant effect than does the number of simultaneous knowledge sources used.

What is most peculiar about the results gained from the research by Pires et al. (2008) is the fact that education does not have a significant impact on all types of innovation. While extending one's information base and hence understanding of market relevancies could be supposed to influence all types of idea generation, it appears that neither personnel training nor a high number of employees with higher education have no significant impact on the innovation performance as relates to physical goods. As, on the other hand, pioneer innovations and particularly process innovations do positively correlate with both of these factors, it works to highlight the substantial differences between innovation projects in manufacturing and service companies. Quite controversially to the evidence discovered on education's effect on innovation, however, Pires et al. (ibid.) identify human capital as an essential resource in all innovation – its importance only emphasized by service innovations context.

It is worth noting that Song et al. (2009) do find focus on service launch, together with proficiency in service design, an essential determinant of new service performance. Service launch, in turn, is defined by the authors to include training on several service aspects and most of these to be significantly related to service performance; these aspects being namely reliability, responsiveness, assurance and empathy. On the other hand, the same authors' findings show that, while small new entrants to a marketplace excel in pioneer innovations as a prerequisite for business survival, large companies have the

benefit of innovation probability – also in cases where the innovation is a product or process, where small companies are particularly less able to compete.

The same conclusion was made by Brentani (2001), who identifies the three factors most important to service innovation success to include not only a strong understanding of customer needs, problems and operating systems as well as a new service development process incorporating formal and well-planned testing and launch phases, but also having a well-trained and well-motivated expert staff working in positions essential to the customer interaction process. (p.184)

Thinking along the services-manufacturing continuum, service-based companies were found by Masso and Vahter (2011) to be more inclined to engage in organizational innovation. However, at the same time most service companies cannot effectively convert this innovation propensity into increases in organizational productivity; the exception being highly knowledge-intensive services, where organizational innovations are one of the key drivers for increased organizational productivity.

However, while company size does have a less profound effect on innovation in service business – as opposed to manufacturing, being part of a multinational corporation in fact has a more significant effect on service industries. This may be partly due to the easier adaptability of services to a new market environment, while many physical products often cannot be transferred between markets at face value (Pires et al., 2008). Furthermore, the level of attention paid to production flexibility is an apparently relevant factor only in manufacturing companies, as discovered by Masso and Vahter (2011).

Zhaou et al. (2010) focus on a fairly different perspective on new service development. What the authors found out is that there are significant differences in the innovation outputs between different knowledge-intensive business service (KIBS) sectors; in sectors such as information and communication technology services the main focus appears to be in being first-to-innovate rather than first-to-market – the market operators relying on the expectation that a cutting-edge innovation is sure to eventually catch the attention of customers in the market, making revenue creation easier once the actual service is launched.

The same effect was noticed by Cunha (2009), whose study of Brazilian telecommunications service providers provided evidence on the companies' revenue

sources having remained practically unchanged between 1990 and 2006 – a majority of their revenue at the time of the study being derived from innovations made already in the 1980s. Further, the author saw that the competitive parities between Brazilian telecommunications service providers, as evidenced by the study, to be result of new technologies not guaranteeing competitive advantage – a fact which in turn makes the ownership of advanced equipment a non-differentiating factor between these companies. Instead, the companies create differentiation through control and integration of critical complementary assets. This supports the findings by Zhao et al. (2010) regarding the fact that as clustering of [here: IT / software] service companies affects their economic behavior, it also has a significant impact on their innovation performance.

Impact of extra- and intra-organizational environment on service innovation

As Zhao et al. (2010) found out in their study, the cultural environment plays a key role in defining a company's innovation performance. From their results one of the key points of separation is between 'hard' and 'soft' environmental factors. In this case, soft factors are those less likely to be influenced by governmental actions such as human resources, social and cultural environment as well as technological potential and funding – hard factors, on the other hand, being infrastructure and local management systems as well as regulatory and assessment systems which are typically subject to great fluctuation due to political climate or other variable.

Of course these dependencies have no universal meaning, and as the authors (ibid.) found out; e.g. Chinese companies rely heavily on policies based on the hard environmental factors, whereas their German counterparts are much more biased towards HR management and other soft factors in terms of innovation performance.

Brentani (2001) introduces a dimensions model for assessing new service development (NSD) success rates. The success determining dimensions are identified as being related to product, market, company or new service development process. Of these, product-related dimensions entail service complexity and cost, frontline staff expertise, service reliability, service standardization and service quality evidence; market-related dimensions include market/need-fit definition, market potential attractiveness and market competitiveness; company-related issues include innovation process fit to corporate strategy and resources as well as to local innovation culture and level of involvement; while NSD process –related specifics include formal research, design and testing as well

as new product launch. Of these, the author identifies strategy and resource fit, innovation culture & management and [physical] service quality evidence to be the most significant determinants of new service post-launch performance. (pp.176-178)

In general terms, knowledge adoption is not as significant in service companies as it is in manufacturing sectors, as shown by Pires et al. (2008); on the other hand, technology adoption has a strong positive effect on service innovation. In general terms, the authors argue that while external sources of knowledge are most important for product innovation, the key knowledge for process innovation is most often derived from within the organization.

It is important to take into consideration the fact that the initiation of an innovation process can be performed by virtually any individual within the organization, but the guidance of the process should be carried out by managers. From the organization's perspective, innovations can therefore be described to possess a 'dual-structure' consisting of an informal social system for idea generation and a management system designed to inspire innovation in employees and ensure idea fit to the company's strategy framework. (Toivonen and Tuominen, 2009)

One of the main ways services differ from one another, particularly in regard to their innovation practices, is the importance of cumulated knowledge in their everyday business activities. For example, Vence and Trigo (2009) identify three main categories services can be divided into:

1. Low innovation-intensive sectors (LIIS)
    - Typically distributing services, whether in the form of transportation or communication services. This group is typically the weakest in terms of innovation projects
2. Technology-intensive and moderately innovation-intensive sectors (TIMIIS)
    - Includes financial services such as banking and insurance. Although non-technological innovations do arise from within this group, the main source for innovation are the suppliers of new technologies and ICT services
3. Knowledge and innovation intensive sectors (KIBS)
    - Considered the leading sector within the service field in terms of innovation. Most immediate reason for innovation efficiency (other than innovative effort as such) is the sector's use of knowledge, mainly tacit knowledge, to create innovations – the knowledge often becoming the core of the end service. Typically, the companies within sector create innovations in close co-operation with their customers, thereby creating much more tailored solutions

to their problems; innovations in the other two sectors are mostly standardized by nature

It is worth mentioning that, while KIBS are most active in increasing their knowledge base and therefore their innovation potential, companies in all of the three groups do employ R&D functions as a means of increasing their knowledge for innovation (ibid.).

Toivonen and Tuominen (2009) identify three main models in which KIBS innovation processes progress:

- *The R&D model,* where specific resources are allocated to the innovation development and the service goes through separate development and testing stages before its launch;
- *The model of rapid application*, where the idea is brought to market at a very high pace, and developed further should it prove a success. This way companies can save investing large amounts of capital into an innovation without success certainty, and assign specific research resources to the successful innovations as needed – the risk being a loss of company brand image through the introduction of clearly unfinished projects to the market; and
- *The Practice-driven model,* in which the service is developed as a joint effort between the supplier and the client and significant renewal needs are identified only afterwards. There onwards the required major renewals can be performed in a systematic fashion – much like in the rapid application model.

In graphical form, the three models can be exhibited as follows:

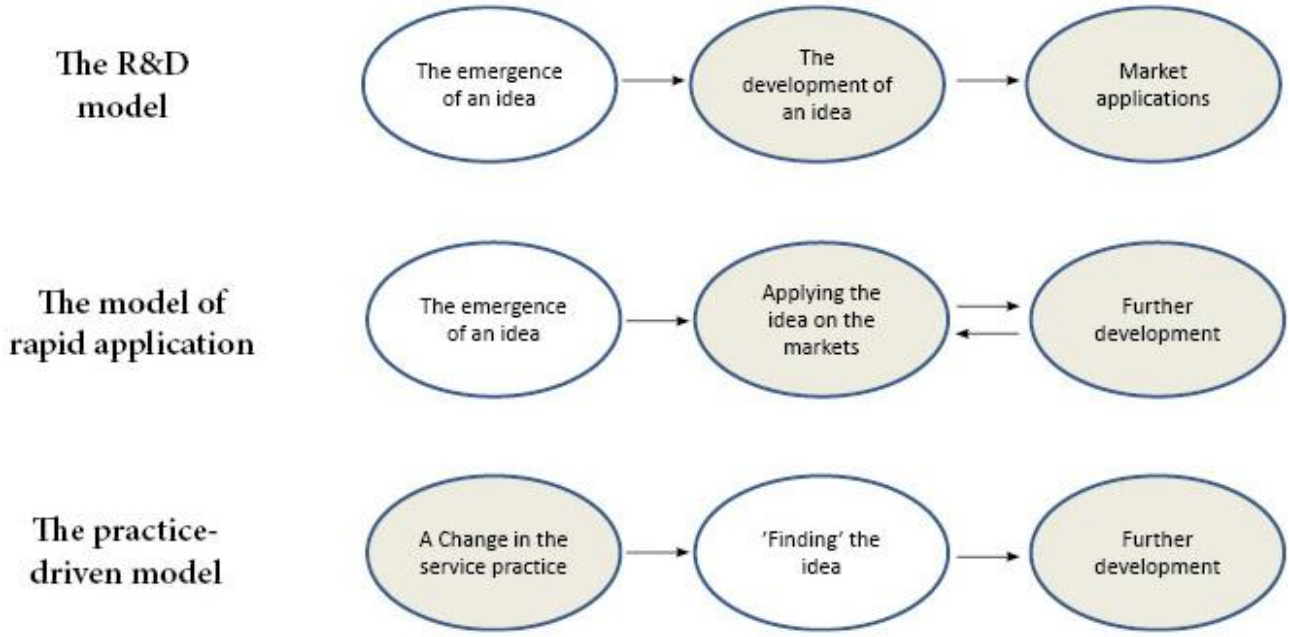

Figure 4 KIBS Innovation processes (Toivonen and Tuominen (2009), 899)

The less knowledge-intensive a service sector is, the more proactive strategies – unit cost reduction, quality improvement, new market entry – the market players typically have in relation to innovation. In some cases, the less knowledge-intensive service industries can be more focused in said variables than even the manufacturing field. At the same time, highly knowledge-intensive service companies treat formal protection of knowledge-based assets as a key tool for competitiveness – the importance level exceeding even that of manufacturing companies [where formal protection of products is generally considered extremely important]. At the same time, having a proactive innovation strategy with the aim of increasing the service range offered increases a company's probability of engaging in product and/or service innovation in service sectors. (Masso and Vahter, 2011)

However, the study by Toivonen and Tuominen (2009) provided evidence on the innovation process as a whole being left to chance by many service companies, the innovations being derived from customer requests and identified as actual innovations only in hindsight. Moreover, service companies within the study often had no specific R&D department of their own, making organizational innovation much more of a random occurrence. Still, as Pires et al. (2008) note, intramural and extramural R&D both have an effect on service companies' tendency to innovate which is greater than the effect on manufacturing businesses.

In regard to co-development of services with customer, Bettencourt et al. (2002) identify five key considerations to be made when profiling potential clients:

- The urgency and priority of the project in question from the customer's point of view;
- The monetary and other resource investments required by the project;
- The client organization's compatibility with one's own in terms of operating philosophy and culture;
- The objectives and goals set for the project by the client; and
- The level of complexity and customization required to create a service to suit the specifications.

(Adapted from Bettencourt et al., 2002, 115)

What is common in all service fields is that, an organization's innovation capacity is highly correlated by the level of knowledge-intensity of its particular service field (Masso and Vahter, 2011). Particularly as relates to radical – or new-to-market – innovations, knowledge-intensive service sectors are even ahead of manufacturing companies; the leaders in this aspect being financial intermediation, transport/communication and sales/trade services. (ibid.)

Additionally, service companies derive a great deal of their innovation capacity from co-operation within themselves. Zhao et al. (2010), in their study of differences in service innovation between Bavaria and Shanghai, discovered that as Bavarian companies have developed a higher degree of specialization, so have the companies also become more complementary to each other's capabilities. This, in turn, has made it much more feasible for companies to collaborate and through this process to enhance their individual innovation processes. Continuing, the authors point out the key role of high value-added services to the knowledge-intensive business services sector and state that the integration and addition of value into the system requires increased collaboration between companies in terms of linked R&D efforts, joint ventures, strategic alliances and network association; Still, the key business operations should be clearly separated from key innovation activities such as joint research, new product or service co-operation or co-creation of new ideas.

In their own study, Pires et al. (2008) found that while a firm's absorptive capacity has a positive effect only on process innovation also in manufacturing companies, the effect in service companies extends to process and product innovation alike. These results are supported to an extent by Masso and Vahter (2011), who present evidence for learning from competitors to be a relevant innovation source only in cases of product innovation.

However, they also note that learning from suppliers has a significant effect on process innovation and the relationship between knowledge sourcing from suppliers and process innovation is marginally higher in service context rather than manufacturing context.

Relating to these findings, it can be argued that a company's ability and willingness to co-operate with its surroundings within the innovation process has a significant effect on its innovation performance levels: As Vence and Trigo (2009) found out, service companies in general have a higher tendency to co-operate in innovation context than their manufacturing counterparts – the most evident examples being business and financial intermediation services. At the same time, however, the authors discovered transport and communication services to be less co-operative with all external agents, which goes against the sector's role as one of the most innovative sectors within the general service business field.

3 Cross-functional integration

"Cross-functional teams take many forms, but they are most often structured as working groups, created to make decisions lower in an organization's hierarchy, that have links to multiple subunits […] and are designed as an overlay to an existing functional organization. CFTs […] are usually representative groups in which each member has a competing social identity and obligation to another subunit of the organization [and] often temporary task teams experiencing abundant pressure and conflict." (Denison, Hart and Kahn, 1996, 1005)

This section of the literature review focuses on the core issue discussed by this study. As the purpose of the current study as a whole is to essentially answer the question 'What are the specific challenges – and advantages – to be taken into consideration when seeking to implement cross-functional teams practice into a relatively small ITC service business context?' this section will answer the following three questions:

1. What kind of steps can be taken within a service organization to better enable the effective introduction of cross-functional teams into the innovation process?
2. What are the main reasons companies do not apply cross-functional teams in their innovation operations?
3. What are the main reasons cross-functional teams should be considered a key part of any innovation-oriented company's organization?

3.1 Factors influencing cross-functional integration

Although cross-functional idea generation is today commonly considered to be quintessential to fostering business changing innovations, many business professionals with limited experience on the matter of cross-functional integration have a lack of understanding on the specific demands set to the parent organization by a cross-functional team setup. For example, as Griffin and Hauser (1992) argue; while deploying personnel into groups of different functional backgrounds (i.e., applying cross-functional teams) does encourage team integration and increase horizontal communication due through self-sufficiency, it may also cause inward looking behavior and therefore also function as a restricting factor to team idea generation performance.

Cross-functional teams, as defined by Edmondson and Nembhard (2009), typically include members from operational units such as R&D, marketing, engineering and production. The role of such teams is to facilitate application of information derived from not only function-specific sources, but also from external personal networks. (ibid.)

As Song et al. (1997) found out; external factors do not have an effect on the linkage between internal facilitators and cross-functional cooperation – the two, on the other hand, being very strongly linked to one another as well as to new product performance. The authors see the insignificance of external factors to be partially explained by the fact that external factors typically influence issues at the organization's strategic level, while the internal mechanisms for cooperation fostering and achieving cross-functional integration are situated at the operative level of an organization.

Figure 5 showcases a framework regarding the interaction of actors at different levels regarding cross-functional teams and their performance, as introduced by McDonough (2003). The figure presents in graphical format the relationship between cross-functional team success and three factor groups influencing it; Stage setters, Enablers and Team behaviors.

Here, the term 'Stage setter' could be translated into pre-conditions for cross-functional team success; that is, in order for there to be a chance of cross-functional teams being successful, project goals must be explicitly clear to the personnel within the group. Additionally, the team members must be empowered to pursuit the project goals at a sufficient level of independence – i.e. the members should not be constrained by the requirements set by, and for, their respective 'natural' organizational units. Two of the more general project requirements, sufficient – and suitable – human resources and correctly inclined organizational climate for cross-functional operations are factors which could be attributed to virtually any and all projects carried through within a business organization; of these, sufficient human resources are particularly relevant to this study, as its case focus is in small-to-medium sized organizations – where the resource value of a single employee is higher than in larger corporations.

'Team behaviors', on the other hand, is a generalization of the specific requirements for in-group cohesion and membership development; members of a cross-functional team must not only be able and willing to co-operate with each other, but also be ready to commit to the group instead of pursuing function-specific or personal goals. Naturally, committed people are also better able to take ownership of the project and thus respect the team as an entity more, as the benefits are more understandable at personal levels.

Finally, 'Enablers' refer to the key personnel within the organization most able to influence the two aforementioned elements due to either having a dominant position within the

organization's hierarchy, or having otherwise gained the general respect and trust by their peers, for example by showing exceptional function-specific skills.

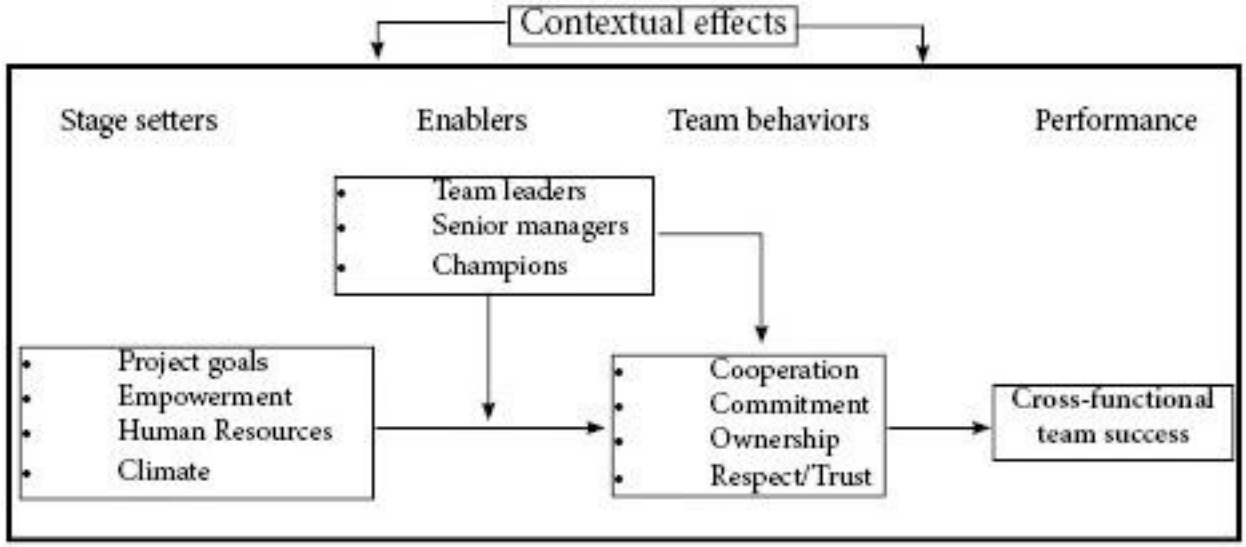

Figure 5 Framework for interaction between CFT actors (McDonough, 2003, 233)

In the study by Song and Song (2010), both communication and decision-aiding technologies were also shown to have a positive effect on marketing-R&D integration efforts both in terms of project success and new product performance. The authors suggest that these technologies be used as supplementary tools to human gatekeepers (i.e., controllers of information flows between functions) to improve the quality as well as quantity of information flows between cross-functional unit members. While human intermediation can be considered of high importance to successful communication due to human ability to understand social cues and interpret information in a flexible fashion, the authors argue companies should introduce technological aids to increase speed and the number of communication channels without the risk of error inherent to human operations. Through the use of technological aids to communication, the authors therefore argue organizations can skip a lot of [unnecessary] discussion and interpretation and thereby reduce the potential for misinterpretations and, in turn, inter-functional friction.

Whether there are tools available to facilitate more efficient information exchange between functions or not, what really hinders or facilitates cross-functional cooperation is the amount of support received by the integration effort from company top management. Song et al. (2010) found top management support to have a positive effect on cross-functional integration through a number of actions:

- Promotion of teamwork;
- Support for team leader autonomy and reward systems;
- Management-introduced formal integration policies;
- Support for cohesive organization; and
- Support for teams formed of different operational functions ('heavyweight teams').

A risk facing employees working in cross-functional teams is therefore created from companies who are employing said teams not on the basis of the theory's fit to general organizational culture, but as a reaction to competitors' choice to do so. Instead, the reasons for introducing cross-functional teams as an everyday model for operations as well as the value to the company should be considered by each organization within their specific business context. (McDonough, 2003)

3.2 Cross-functional managerial challenges

One of the key factors in why organizations sometimes face great difficulties in their attempts to create cross-functional integration teams is that, the challenges related to cross-functional integration are subject to great variance from one functional unit to another. (Ruekert and Walker, 1987)

The reasons and results of cross-functional cooperation were found by Song et al. (1997) to be similar from one functional unit to another. For example, from marketing perspective, the main causes for interdepartmental conflict were identified in the study by Ruekert and Walker (1987) as the following:

- Perception of lack of customer orientation and/or knowledge among technical staff;
- Technical staff's slow responses to requests for help;
- Technical staff's failure to provide necessary information and support for the service; and
- Unclear definition of departmental goals, objectives and responsibilities.

On the other hand, the same list from R&D personnel's perspective would be:

- Marketing department's overly hasty responses to the customers;
- Marketing department's inability to provide technical staff with needed support; and
- Unclear assignment of goals, objectives and responsibilities for each department.

(ibid.)

The above is strongly supported by Pinto et al. (1993) who argue that, superordinate goal setting, organizational rules and procedures, project team and procedures, physical proximity and accessibility all have a significant positive effect on cross-functional cooperation. A graphical representation of the factor linkages can be seen in Figure 6:

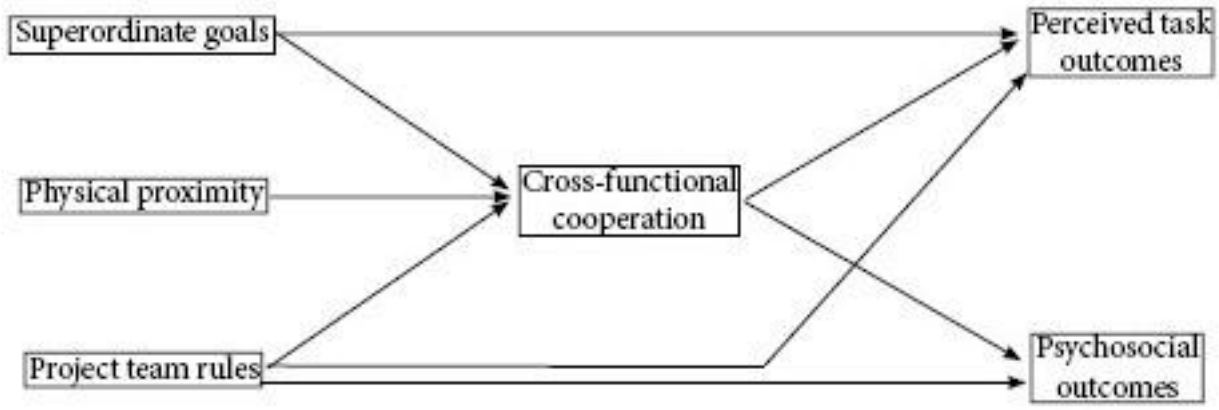

Figure 6 Factors influencing cross-functional cooperation (Pinto, Pinto and Prescott, 1993, 1293)

In the figure above, linkages shown between different elements were found to be significant in the research conducted by Pinto et al. (1993); that is to say, of all of the possible linkages examined, only – and all of – these provided results exhibiting significant linkages.

In many ways, the figure could be argued to be a merely different representation of Figure 5, by McDonough (2003), with the elements preceding cross-functional cooperation having highly similar characteristics if only under differently generated factor groups. What is different in this particular diagram is that it expands the process horizon to cover also the outcomes of cross-functional cooperation. While it can be argued to be a generally accepted argument that cross-functional cooperation as such should affect psychosocial and perceived task outcomes, it is interesting to see that whereas superordinate goal setting has a significant effect on perceived task outcomes, project team rules in fact influence perceived task outcomes as well as psychosocial outcomes.

However, simply reducing the psychological distance within cross-functional teams has negative traits linked to the positive ones; while lower psychological distances increase communication frequency and bi-directionality and therefore also facilitate higher perceptions of relationship effectiveness and information use, they also increase the probability of team members' engagement in social interaction during work hours, reducing

the amount of radical innovations developed due to increased groupthink. (Fisher et al., 1997)

Bstielert and Hemmert (2010) argue that all organizations have unique mindsets when it comes to sensitive issue solving such as risk taking or voicing innovative ideas. Given that separate issues are thus seldom solved by a single solution, Song and Song (2010) argue that as the level of R&D-marketing integration is positively correlated with innovation project success as well as new product performance (also; Song et al., 2010), managers should make sure to identify and prioritize the existing barriers for inter-functional collaboration, and only then start implementing solutions thereto. Discussing the role of IT as a problem solving tool, the authors suggest the use of communication technologies to overcome physical distance –related issues, while decision-aiding technologies should be employed to minimize goal incongruities and cultural differences.

The different conflict management strategies were studied in greater depth by Xie et al. (1998). The authors identified six key strategies, shown here in order from the least management-intensive to the most managerial-intermediation requiring (Xie, Song and Stringfellow, 1998, 197):

1. Avoidance
    - The team makes an effort to not engage in conflicts; in effect, making individuals avoid any perceived issues
2. Accommodation
    - Functional units' willingness to sacrifice some of their own demands to suit those of other units
3. Collaboration
    - The functional units' willingness to work with other functions to solve arising conflicts
4. Compromise
    - One conflict side's willingness to meet the other 'in the middle' – that is, accommodating some of the other function's wishes while holding on to some of its own at the same time
5. Competition
    - Functions, as sub-units to the cross-functional team as a whole, take advantage of their importance to a specific project to achieve group acceptance of their view points
6. Hierarchical resolution
    - Conflicts are resolved through managerial intervention, or decided on the basis of managerial opinion input.

While intra-organizational communication and cooperation are certainly of high importance in innovative companies, considerations should be made on the specific tactics employed as means to this end. For example, a common tool for companies interested in enhancing cross-functional collaboration within their organization, issue avoidance, is shown by Song, Xie and Dyer (2010) to have either positive or negative traits attached to it dependent on the severity of the issue; while small problems can – and, in some cases, should – be simply played down by involved persons in order to not increase their perceived importance in the eyes of non-related employees, as the importance of a given issue increases in terms of its effect on group cohesion, it becomes increasingly important to apply effective problem solving tools to it. In the latter cases, avoidance behavior by team managers tends to reduce cross-functional group integration, which in turn reduces company performance potential and therefore can have a drastic impact on the company and/or project longevity. Hence, the authors recommend companies to employ collaborating conflict resolution methods and through such activity increase the team's cross-functional project involvement and ability to exchange information between said functions even in cases of interpersonal conflict.

As Ruekert and Walker (1987) argue, the stress can manifest itself at different levels of respective organizations, dependent on the strategy employed; while aggressive companies – the ones seeking competitive advantage from constant development of business processes and products offered – see much of the stress being shown at the strategic decision-making levels, companies with merely defensive strategies – companies innovating solely to keep pace with more aggressive peers – in regard to innovation typically see most stress getting distributed onto the operative levels of the organization.

Schippers et al. (2003) found there to be, in addition to the positive factors, a number of negative results from cross-functional integration efforts, most of which are particularly apparent in situations where organizational change and/or crisis have triggered high stress levels in employees:

- Reduced team performance;
- Increased dissatisfaction;
- Employee turnover;
- Sick leaves usage;
- Lack of commitment; and

- Job stress

These negative effects are typically the outcome of one or more of four reasons identified by Xie et al. (1998)(also; Xie et al., 2003): Lack of superordinate goals; lack of cross-functional integration; lack of harmony in cross-functional relationships; and the high costs linked with conflict management. In addition, incongruity of goal setting for cross-functional teams has a significant, negative impact on cross-functional harmony and involvement as well as the quality of cross-functional information sharing. (Xie et al., 2003)

Another key finding by Schippers et al. (2003) was that the effectiveness of information transfer does not automatically increase over time, but is rather dependent on the complexity and diversity of the group. According to the study, more diverse teams' communication is reduced in relation to group longevity – on the other hand, most homogenous teams' communication does increase and improve over time. The authors attribute this difference to more diverse teams' sensitivity to differences in opinion; while the group may, at first, appear to perfectly complement each other's viewpoints for the problem at hand and thus increase interdependence, the ideological distance thereof may develop into a separating factor as the group tasks and goal settings change. Less diverse teams, on the other hand, may be better able to consider conflicts as task-based rather than arising from personal relations, enabling them to develop problem-solving techniques and also to better integrate and discuss ideas.

Figure 7 below shows how Schippers et al. (2003) view interdependence and group longevity to affect information sharing capabilities within a cross-functional team setting. The focus of the authors' study was in the reflexivity of cross-functional teams – the extent to which teams reflect upon and modify their functioning – affects the group members' satisfaction in the group, their commitment thereto and the performance of the team as a whole.

What Schippers et al. found out was that, there are both direct and indirect factors influencing a team's propensity to reflect upon its performance. The former include factors such as team composition, the characteristics of individual team members, and the overall diversity existing between team members and therefore within the team itself. Their findings of the relevant personal factors – gender, age, education and tenure on the team – are in line with findings by other authors (e.g. Song & Song, 2010), yet the effect of overall team diversity has previously received far less attention in the academic literature.

Another interesting point is that, indirect factors such as outcome interdependence and group longevity can have an effect on not only whether and how well a team is able to reflect upon its own performance, but also on the way this reflexivity translates into team satisfaction, commitment and performance.

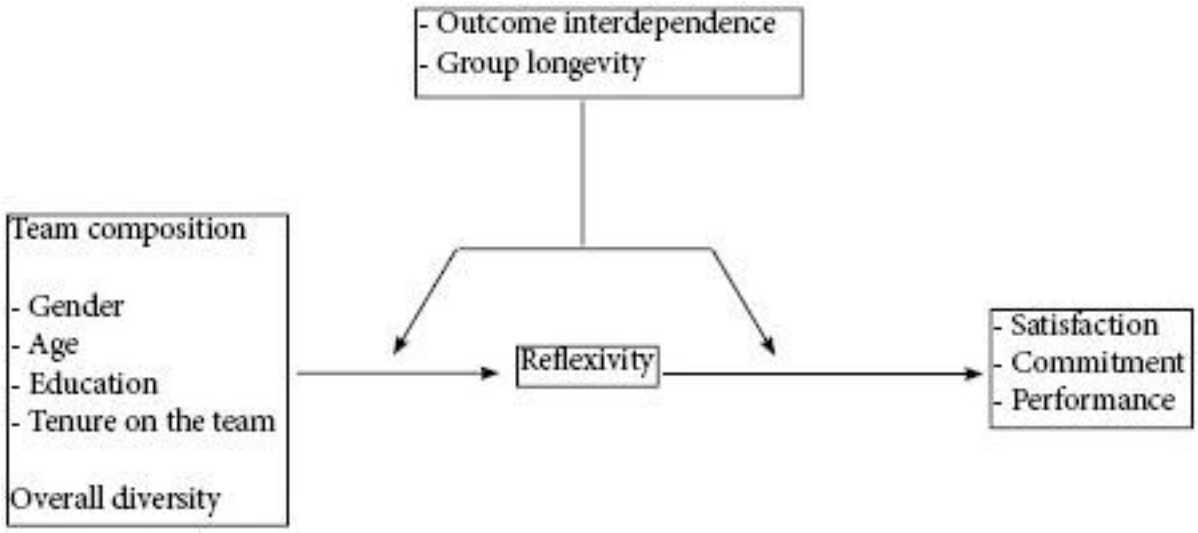

Figure 7 Group interdependence and longevity's effect on CFT performance (Schippers et al., 2003, 786)

The impact of the length of time a cross-functional team works as a unit on new product performance was studied by Xie et al. (1998). One of their key findings was that there is only a limited time scope during which the functionality of a multi-discipline team increases; thereafter, longevity will start to exhibit negative effects on team performance until eventually becoming a reducing factor in terms of new product performance (see Figure 8).

This graph is an excellent supplement to the findings by Schippers et al. (2003) shown in figure 7, in which the time of not only membership to the team but also of the team's overall life span were presented to have a significant effect on the team's ability to reflect upon its performance and functionality.

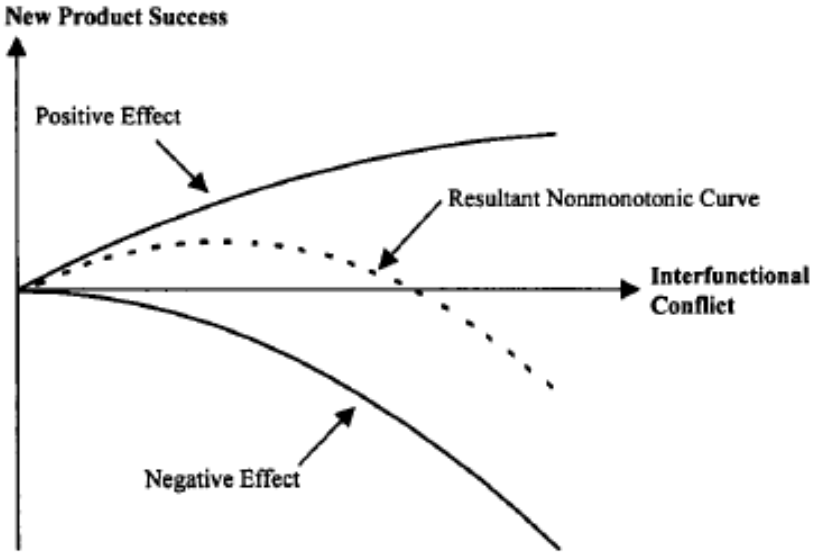

Figure 8 Group longevity's correlation with performance (Xie, Song and Stringfellow, 1998, 195)

Edmondson and Nembhard (2009) also found there to be a variance in the cross-functional teams' performance as results from group longevity; according to their findings, keeping a new product development team together for more than 2-3 years significantly increases risk for the team becoming inverted, hence losing awareness of the team's surroundings. At the same time, there is great risk for the in-group discussions becoming increasingly focused on irrelevant issues rather than focusing on set tasks and goals. This being said, the authors also found out that creating an environment where psychological distances between team members are minimized can be detrimental for organizational innovation by facilitating individuals' psychological safety and hence a free exchange of information within the team.

However, even teams which have been working together for a long period of time will come across situations where they need the expertise of an individual from outside the immediate team to give insight on specific issues. These individuals may cause problems through distortions in terms of group dynamics and cohesion; their visits may lead to increased coordination problems and therefore also increase cultural, language, time zone and norm specific differences. (Edmondson and Nembhard, 2009)

For the reasons stated above, it is extremely important for a new product development team to be provided with effective leadership, psychological safety and conflict management. These resources will enable the team to create project management skills, expanded social networks and boundary-spanning skills of its own as well as to broaden

its members' functional perspective, and thereby increase the value of the team both as a collective as well as the members as individuals. (ibid.)

3.3 Advantages rising from cross-functional operations

As mentioned in the earlier chapters of the study, increasing cross-functional interdependency typically has a positive effect on communication frequency and bi-directionality between functions and a negative one on coerciveness. The effect is, however, moderated by decreasing psychological distances between team members, while it also provides other results such as increased relationship effectiveness and information use. (Fisher et al., 1997)

As argued by Park et al. (2009), forming a new product development team from members of different functional units enables more efficient communication (through inter-functional interpretation), which in turn leads to an enhanced new product development process. This is a result of team innovativeness' and project timeliness' positive correlations with the amount of information sharing, which in turn was shown to in part correspond to the amount of multi-knowledge individuals within aforementioned cross-functional new product development team. These findings are very much in alignment with those made by Matthing et al. (2004), who in their study found technical staff to be at first highly opposed to highly innovative ideas set forth by their marketing counterparts, yet come to understand the underlying rationale and accept these ideas as the cross-functional discussion progressed. Therefore, as the authors argue (pp.492-494);

The experience of the experiment tells us that there must be incentives for company staff to involve and work together with the customer. […] [Therefore] innovation should not be left solely to engineers. The R&D function should be developed to a cross-functional site including marketers, engineers, behaviorists etc. Different knowledge and skills are needed to identify latent needs and to learn from customer behavior, experiences and preferences.

Table 3, originally introduced by Denison et al. (1996), provides insight into the inherent challenges in employing a cross-functional approach to innovation and other organizational processes. The authors' findings are here grouped under three main process particles; Organizational context, Team Processes, and Outcomes.

The organizational context provides a detailed listing of factors which should be included in the planning phase of a cross-functional team implementation: In order for such a venture to have any likelihood of success, it must be coordinated with other teams; the team must be presented with sufficient autonomy and power in order for it to overcome traditional or function-based organizational culture hindrances; there must, however, be linked to the different functions relevant to team goal setting; a cross-functional team must be allocated sufficient resources – both time, money and human; the team must be set a clear mission and direction; and finally, the team must have an autonomous reward system in order to facilitate team members' team-centered effort.

In terms of team processes, the authors identified the most important factors to be: existence of clear group norms guiding individual behavior as well as project quality; perceived importance of assigned team duties as it relates to not only the organization but also the individuals' career development; individual effort shown by the team members; team efficiency – particularly in the sense of meetings and decision-making, available creative strategy; and breadth in terms of different viewpoints being integrated into the group effort.

Finally, the outcomes of a successful cross-functional team implementation were identified to be: creation of new information both in terms of innovations produced as well as expansion of individuals' perspective; compression of time required to perform the tasks assigned to the team compared to pre-group levels; expansion of team members' understanding of the set project and its complexity; members' learning outcomes regarding both skills as independent workers and members of future teams; group members' perception of personal growth resulting from group membership; the development of the group's capability for working as a unit; and the overall sense of effectiveness – whether perceived through personal experiences or through feedback received from peers outside the immediate team.

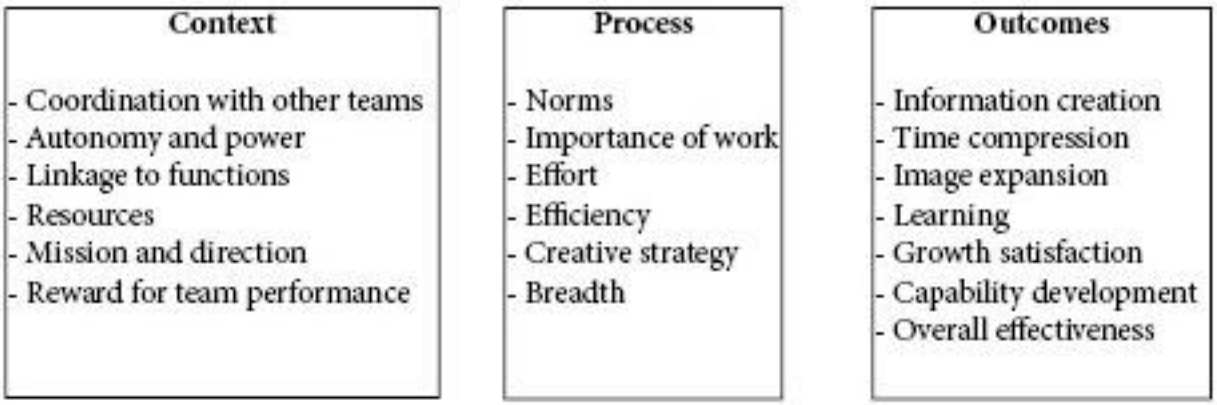

Table 3 Model of CFT effectiveness (Denison, Hart and Kahn, 1996, 1017)

Indeed, this description is provided further support for by McDonough (2003), who identifies the key outcome reasons for cross-functional team implementation as:

- Increasing product speed-to-market – that is, decreasing the amount of time it takes for an idea to develop into a marketable product or service;
- Increasing product quality;
- Increasing customer satisfaction;
- Increasing new product success rate; and
- Decreasing the cost of developing ideas into marketable products and services.

(McDonough, 2003, 229)

The study by McDonough (2003) also provides us with some of the key process reasons companies apply cross-functional teams theory into their everyday operations:

- Enhancing cross-functional integration;
- Increasing employee ownership of projects;
- Improving the company processes – the key focus being in making said processes easier to follow, evaluate and manage;
- Increasing employee motivation; and
- Enabling more efficient use of available resources.

4 Methodology

This section will first discuss the research methods applied in the pursuit of academically sound material for the current study. From there, the point will move on to discussing the criterion for the selection of the aforementioned research methods. Finally, the author will go through the data processing and analysis methods applied in the study.

4.1 Research method selection

For the purpose of forming a relevant bond between services management and marketing, innovation management, new service development and cross-functional integration as separate topics, a comprehensive background research is first performed through a thorough examination of existing academic literature; in the selection of journals and other literature sources used, the topics are weighed on the basis of theoretical proximity to the current study. The insights derived from the previous studies are then applied as a background on which the semi-open interview frame were based, and which the empirical findings – the data set used for the current study – in turn are reflected upon.

For collecting empirical data, a series of semi-structured personal interviews were conducted in a medium-sized local operator within the Finnish telecommunications sector.

The interviewees were informed of the nature of the study conducted, yet the actual set of questions was retained so as to facilitate impromptu answers instead of pre-meditated answers, and therefore to reduce the possibility of the interviewees providing ‘suited’ answers and not real, personal views.

Telecommunications field was selected to represent high-technology services as a general group due to the way in which the physical product and service are interdependent within the sector; telecommunication services are meaningless without appropriate devices to serve as terminals – at the same time, the operation of these, most often third-party-created, devices in their modern form is directly dependent on the possibility to transfer data between them; and hence dependent on the telecommunications companies providing this service. Perhaps even more importantly, the case company selected had only recently implemented an actual cross-functional team into their organization, meaning that the interviewees – most of which having worked for the company for a number of years – could provide highly informative opinions regarding the difference in process

management and results between cross-functional team and the ‘traditional’, function-based organization.

While a vast majority of academic literature touching upon innovation management and cross-functional teams discusses the issue from the viewpoint of a given large company with fairly abundant resources to employ in its projects. However, as Finland has a rather limited amount of such big companies operating within the Telecom sector – whose relevance was stated earlier – and instead there are quite a few SMEs operating within said sector, the author chose to conduct the primary data collection within an organization with relatively low hierarchy and limited personnel.

By choosing a company with aforementioned characteristics, the author was able to perform a modified version of the ‘360 degree study’ – originally developed for assessing the performance of individual employees through subordinate, peer and manager interviews (see Maylett & Riboldi, 2007, 50) - on how innovation is perceived within the case company, what the company’s related strengths and weaknesses have been in the past, as well as how the flows of information were being experienced by not only those at the two ends of the flow but also by those indirectly affected by them; in SMEs, it is rather customary for a limited amount of people to at least come across a fairly broad selection of duties in their daily work, providing these people with a less narrow-minded approach to each other’s roles. On the other hand, larger corporations tend to have highly specialized roles for their employees, which in turn may lead to a much less understanding approach to other people’s line of work and the responsibilities therein.

Research paradigm

As the aim for the current research is to examine the challenges and benefits of an organization seeking to implement cross-functional teams practice into its innovation process, interview data is considered at face value – that is, no hidden meanings were sought from the responses.

Instead of seeking to interpret individual respondents’ answers, an objective truth was sought by performing a set of interviews covering a wide variety of different employee perspectives ranging from top management to the actual performing, service development team member, employees. The interviewees were asked the same main questions, and more interpretative freedom was taken in the selection of in-depth questions, chosen on the basis of respondent specialty and topics arising in situ.

In the light of these research characteristics, the paper should be evaluated on the basis of criteria relevant to the critical realism perspective.

4.2 Data collection and analysis

The empirical data was collected through a series of six interviews conducted within the case company's facilities. As the organizational position of each individual was fairly different from that of the next person, the allowed time for each interview similarly varied from one interview to another.

The interviewees, a list of which can be found in the appendices, were chosen on a top-to-bottom selection basis: The initial lead to the company was found at the top level management of the company; they were then explained the topic and purpose of the study, and asked to identify key team managers with experience relevant to the study, who in turn were asked to name people with relevant experience working with innovation and development project teams.

The length of the interviews lasted an average of 47 minutes, depending on the time slot available; most of the interviews were conducted during the respective persons' working day, which limited the availability of free time particularly in cases of manager level employees.

While the interviews were conducted in a semi-open questionnaire format (for interview framework, see Appendices) with additional questions posed in cases where the interviewee response was considered, by the interviewer, to either not answer the question – suggesting a misunderstanding of the question – or to provide an approach to a given question not previously considered by the author, and therefore provided some variation in the ways in which the interviewees answered the questions, the answers were double-checked through follow-up questions where needed to ensure understanding on both sides. Furthermore, as the interviewees were informed that the interview data would remain anonymous, the author has no reason to believe the answers given to be anything short of truthful and accurate descriptions of individuals' perceptions; therefore, a high level of data validity is assumed.

The initial interviews were conducted at the company offices, and recorded with an audio recording device. Once the interviews were completed, the tapes were transcribed verbatim; due to the critical realist nature of the study, the interview answers were not

deciphered further, but evaluated at face value instead. Once the material was transcribed into written format, the author conducted a two-phase analysis:

1. The transcripts were read through to find common denominators between the replies in order to create several preliminary groups
2. The data was then further examined to create groupings similar to those established from the study of pre-existing literature:
    1. ICT service marketing;
    2. Service innovation;
    3. Innovation management; and
    4. Cross-functional integration

5. Findings

In this section, the author will provide linkages between the empirical data and theoretical background collected for the study. The section is divided into four key areas, their definitions derived from the study's analysis on existing literature sources, namely; ICT services marketing, innovation management, new service development and cross-functional integration.

5.1 ICT services marketing

As the telecom industry in Finland is fairly fragmented, and there are a relatively high number of companies of various sizes in the industry, the products and services offered differ fairly little from one provider to the next. Also, as a typical Finnish city is much smaller than those in most other technologically advanced countries – in particular Japan, China or India – achieving economically viable market penetration requires a much more relative reach than it would in the aforementioned countries, which in turn makes it increasingly important to take the customer's opinion into consideration when developing new sales articles. As interviewee B noted:

> *Many of our new service development ideas have bounded from the sales department. Besides, who would be better able to listen to the customers than those who contact them on a constant basis regularly?*

Besides the level of penetration required for a title to make business sense, another issue is the aggressive price competition taking place in the Finnish markets; while the costs of building new infrastructure to support new technologies and thus new service capabilities are extremely high, the Finnish telecom market is characterized by a few national operator brands with low-cost sub-brands.

While Finland is often mentioned among the most technologically advanced countries in the world, the fairly small number of people spread across what is a fairly large amount of land means that many of the cutting edge technologies tend to come reach Finnish consumers only after considerable time. As interviewee D put it:

> *If you consider the sheer capacity of the devices produced by the large manufacturers to the US, China or Japan, for example; the devices are of such a scale that one of them would suffice the whole of Finland – or, alternatively, to various other parts of Northern Europe.*

Of course, as interviewee D also points out, the comparatively small size of Finnish Telecom companies does have its benefits; while large companies are forced – by market factors – to invest in the newest technologies as soon as possible, smaller companies have the benefit of joining in at a later phase of their life cycles, at significantly lower costs.

A surprising finding in terms of services marketing within the scope of the case company was that, while Finnish people, and particularly students and other heavy users of ICT technologies could be expected to be rather demanding and vocal about their demands, all of the interviewees for this study were of the same opinion; the amount of people requesting services beyond the case company's ad hoc production ability is bordering insignificant.

5.2 Innovation management

One of the leading topics found in the interviews was the notion of time as a facilitator and/or inhibitor of effective and efficient innovativeness; By one respondent at management level, a slight pressure linked with tight schedules was seen as a boosting factor to people's productiveness – on the other hand, they admitted that rush and stress, when in excess, in fact reduce the organization's ability to innovate. In any case, providing people with actual 'free thinking time' was considered to make little sense. As interviewee A expressed, when suggested the approach:

> *Oh, no. Everybody has so much to do that they'd laugh at me if I went and suggested such a thing! Although, I'm sure they would love it..*

From the employee perspective, on the other hand, rush was seen as a having a significant negative impact on individuals' – and, thereby, the organization's – ability to come up with fresh thoughts and ideas for improvement.

Another key factor in defining innovation in a SME setting was seen to be the accumulation of a fairly high number of projects for each individual employee; as is the commonly agreed case in many small enterprises, their employees are required somewhat of a free-minded approach to their job duties, as problems and projects may arise where the best possible people are needed regardless of their 'official' job description. Furthermore, in cases where the project had been a planned effort by the company, there appeared to be a procedure for managers to, in lack of a better word, compete with other managers within the organization for their desired personnel.

I find this a rather peculiar concept, as I imagine it must create quite a bit of extra tension for the employee him/herself, as well, which in turn will, as mentioned earlier, have a negative effect on their innovation ability. The very limited amount of human resources available in SMEs by definition also makes the concept of cross-functional teams less appealing, per interview data, as it takes people away from the 'daily routines' and therefore can cause discontent among those not within the development unit. Naturally, the job piling does also touch those within the development unit, as they would be solely responsible for all development work performed within the organization. In the words of interviewee C:

> *Of course, it would be an ideal situation to have a large number of people, but I think the reality still is that projects tend to fall to the same people. I do not believe this situation is going to see much development, but of course it's dependent on the specific project: If we consider small projects, then naturally they can be performed simultaneously. Then again, if it is a larger project – we had one last year – there is little if any time for anything else, really – after all, we still needed to carry out all our daily duties at the same time.*

Another finding rising from the size factor was seen to be the commercialization of products and services; whereas companies operating either in larger markets such as the US or Japan have the option of investing into a single metropolitan area and thus reach more people than there are in Finland as a whole, Finnish local operators need to consider each individual product and service based on its potential for becoming a volume product. This makes Finland and its sub-areas a highly difficult market for ICT service providers to operate in – a fact which shows in the number of innovations bounding from within the market, a number which was deemed rather unsatisfactory in several interviews.

A factor which might in part help Finnish service providers in overcoming the lack of original innovations is the relatively high activity level of Finnish consumers; by account of all the interviews, the customer was found the single most important source for new product/service ideas – a fact which may help make the few innovations created within the market to be highly suited to it. What must be taken into consideration, however, is that there ought to be a centralized 'funnel' for processing customer inputs, as having several individuals respond to customers regarding their requests and suggestions can not only be

considered active customer service, but also disorganized customer service – the latter being naturally a highly undesirable outcome.

As far as group longevity and reward systems go, the interview data was very much in line with what could be found in the previous literature: While group longevity was considered to be beneficial to a team's performance of standard procedures such as documentation, the interviewees were essentially unanimous about there being high probability for an innovation team's innovativeness falling short, should the team stay together for excess periods of time. To counter this effect, new employees or visitors-to-the-group were seen as a best practice for bringing new perspectives and ways of thinking into the mix. Naturally, proper documentation was called for, as it will help in situations where older members of such groups move to retirement or change employment – otherwise the benefits of a routine well-learned should go to waste. Group longevity was also seen as an indirect modifier of team reward system; while directing rewards to the team alone was seen acceptable in a long-term situation, if the team were only a short-term project, the rewards from the project should be projected evenly across the organization, as those not within the team would still be engaged in what can be considered 'doing the team members' work'.

5.3 New service development

In the case company, they have introduced a development team – lead by one of the company's top managers – responsible for the vast majority of innovation effort within the company. Still, the actual people participating in the development of a single service do vary, as people are chosen to each project on the basis of their personal skill sets – new service development being merely a project among others. That being said, the company has, according to the interviews, rarely actually developed new-to-market innovations; instead, most of the new products are perceived best practices picked up from trade shows and foreign/local competitors. As said by interviewee D:

> *The most significant challenge for us, as a relatively small organization, is that other larger companies have been able to fine tune their processes into something much more efficient and better functioning than what we have. In fact, we are currently running behind in virtually everything; we don't really produce new innovations to the market, but instead try to keep up with what the competition is doing and match their offering.*

There were three major obstacles identified for new service development in the case company's context:

1. Technical staff was seen as to focus on the technical devices – service facilitators – and at least partly forgetting about the service itself;
2. When aiming to penetrate to a new geographical location, the costs incurred in building the necessary infrastructure can be rather overwhelming, which leads to difficulties in finding the optimal solution for each particular area; and
3. While a key source for competitive advantage was seen to be derived from the service delivery process, the customer was seen as being very poorly integrated in the development process, which in turn leads to neglecting of existing clients in the pursuit for new ones.

Related to the latter, it was to some extent surprising, how similar the interviewees' views were on customer participation in the process; customers were seen as what should be the main source for drivers for new service development. However, even as the relative amount of technologically over-zealous customers was seen as minimal – it appears, the company's customers tend to be highly aware of the technologies already being offered to customers in other countries, there were questions posed regarding the lack of control over information flows, and in worst case scenarios, the loss of competitive advantage. It is worth noting that, while Finnish local ICT service providers do not develop vast amounts of innovations as such, the capacity of technical equipment used in larger countries typically exceeds the need of Finland as a whole, and do not makes sense in terms of investments: Therefore Finnish companies are essentially forced to perform at least incremental innovation projects ranging from months to several years, time-wise.

In an engineering-oriented country, which Finland is typically considered to be, the role of marketing and sales in creating company success has only started receiving due appreciation a relatively short time ago. Also in the case company, the traditional approach to new product development has been on the technical side of the organization, although recently more and more responsibility in the matter has been transferred to the sales unit. As interviewee B mentions:

We have a lot of meetings, where both construction and development people are represented, as well as sales. However, in the projects where there are technical and sales staff, it tends to take some discussion and a lot of negotiating to reach a mutual agreement – but at the end the agreement is found, and the end result is a shared one.

5.4 Cross-functional integration

One of the most surprising issues regarding the interview responses was the down played role of cross-functional teams as innovation enhancers – per some interviewees. What was seen as being highly important, however, was people's ability to understand each other and integrate over functional borders within the organization; the most essential factor appeared to be the inclusion of the best possible talent in the service development process. In correlation with existing literature, effective cross-functional integration was seen to highly dependent on top management commitment to the process; one person described the optimal cross-functional team as being managed from high enough a managerial level so as to have its own, justified place in the organization, yet self-sufficient enough that very little actual management would be required to get people to perform their duties at the best possible level.

As regards to team size, smaller and more focused teams were argued to be better when creating independent services, by one of the respondents; when developing service entities with interdependent parts, a more loose, broader-vision team formation was their preferred choice.

As is probably the case in most SMEs, as discussed earlier, they suffer from a limited amount of human resources at their disposal when compared to some of the larger operators in virtually any field; therefore cross-functional teams were seen as merely loose collections of professionals with complementing skill sets – meaning that, the team members identify more as members of their 'native' function than of the cross-functional team per se.

However, sales and technical staff were seen as having come much closer to each other co-operation –wise within recent years – even if the general process of cross-functional co-operation was seen to require a great deal of work and negotiation in order to make it

efficient. In order to facilitate this, the company has in place communication channels between its sales and technical staff, and each function is encouraged to convey ideas to others for feedback and suggestions. Cross-functional communication was estimated to be particularly important when a high number of individual projects were being conducted simultaneously.

As has been established earlier in the study, the key differentiating factor between developing physical goods and services is the role of the customer in the creation and delivery of a service; this was emphasized by all of the respondents, as well. Although not everybody agreed on the point in a service's development curve in which the customer should be brought in with their views, all interviewees agreed that there should be some sort of semi-structured form of representation for customers to participate through – whether it be a customer council or other 'member' of the cross-functional team as such or simply an occasional event in which customers could interact with the case company employees and get their wishes and requests heard: In any case, the inclusion of the customer views should be made before the concept is developed into a service, so as to increase the potential of customers making a profound impact on the design of said service. However, the customers representing the marketplace should be chosen extremely carefully, as there is great risk of getting input from people who actually do not represent the desired market at all.

On the topic of development team longevity, the answers did not vary to a significant degree between intra-organizational unit and aforementioned customer representation group; in terms of performing standardized tasks, team longevity was seen as merely a positive factor – yet, on the other hand, participants were seen as to be in need of replacement every so often to prevent groupthink – regarding intra-company teams – and excess focus on a single area / customer background type – regarding customer representation group. At any rate, simply having all the necessary functions/target groups represented was argued to be insufficient; the members of either group must also be willing and able to share their ideas and develop new ones – to prove their worth, so to speak.

5.1 Summary of key advantages and challenges

This study sought to answer one main question: What specific advantages and challenges should be taken into consideration, when implementing the cross-functional teams practice in a Finnish telecom SME?

The following tables exhibit the correlations between key findings and previous academic discussion regarding cross-functional teams implementation:

Advantage	*Effect strength, suggested by literature*	*Effect strength, identified by interviewees*	**Correlation**
Faster project completion	+	0/+	**+**
Increased resource efficiency	+	-	**-**
Quality of inter-functional information transfer	+	0	**-**
Customer integration ability	0	+	**-**
Increased NPD/NSD project performance	+	+	**+**

Challenge	*Factor significance, suggested by literature*	*Factor significance, identified by interviewees*	**Correlation**
Organizational culture	+	+	**+**
Senior management support	+	+	**+**
Inter-functional coexistence	+	-	**-**

(In both tables, a value of 0 is used to depict cases where no significant effect was found, or the arguments were inconsistent between sources)

In terms of advantages from cross-functional team introduction, the two upon which both the existing literature and the interview data agree upon are project completion times and increased project performance. However, what is interesting is that, while previous studies have shown cross-functional team implementation to increase the efficiency of resource use and the quality of inter-functional information transfer, similar results were not provided by the interviews conducted for this study.

In terms of resource use efficiency, the key reason is arguably the limited amount of resources inherently present within a small organization; while the resources allocated to new product or service development efforts may, in fact, create more results per unit used, the effect of having even one employee taken from their 'natural' function to solely perform development duties was argued to have a highly significant effect on the original function's ability to perform its daily routines, as well as on the work load allocated to remaining employees as a result. Moreover, as telecom SMEs were identified to gain a majority of their new products and services as 'copies' from larger markets, such development projects were not, in regard to the case company, portrayed as processes as vital within the company's performance as they typically are seen as in larger corporations.

Similarly, cross-functional teams' effect on the quality of inter-functional information transfer is very much a product of the organization being particularly small and hierarchically low: As there are no separate offices or other factors promoting low physical proximity, and there being a certain level of interaction present in any case, the effect of introducing a team solely focused on improving cross-functional integration and interaction is likely to *not* see results as significant as might be evident in larger, departmentally introvert organizations.

In terms of process challenges, organizational culture and senior management support were considered by the case interviewees to have as significant an effect on cross-functional integration potential as was suggested by previous studies. However, inter-functional coexistence – that is, individual functions' likelihood of accepting other functions as project partners – was not perceived to have quite the significance regarding cross-functional team implementation success in the case company, as suggested by previous authors. In essence, this factor was not supported by interviewees by much of the same arguments presented against the significance of cross-functional teams in terms of inter-functional communication, explained previously.

6. Conclusion

The purpose of this section is to provide a summary of the key findings from this study. The section is organized in the following form: First, there will be a restatement of the research purpose and goals. From there, the author will move on to summarizing the main findings and make final reflections between the previous literature and the empirical evidence gathered within the scope of this study. Finally, the author will translate these findings into practical implications to modern business managers, as well as provide suggestions for future research on the topic.

6.1 Managerial implications

While cross-functional teams, as a management practice, did not evident any significant drawbacks, there are several points which should be taken into consideration before engaging into the process of implementing cross-functional teams into an organization.

The most important of these issues is the availability of managerial resources available to be allocated to the newly formed team; in SME context, for example, there tends to be a fairly small number of top level managers in the whole organization; this leads into the situation where all of the managers have a very strictly defined field within which they seek to operate to the best of their potential. In these cases the question of whether additional managers are necessary or not is likely to arise – in small and medium-sized Finnish enterprises, the organizations tend to be fairly low in hierarchical terms, and therefore adding managers simply for no instantaneous benefits may create negative responses.

This leads to the second critical factor; having the right kind of organizational culture in place to accommodate the introduction of new ways of operating. If a company is built around the argument ‘Don’t fix it if it isn’t broken’, for example, any effort to create new sources of competitive advantage may be considered redundant or even threatening by the members of such an organization. Therefore an analysis should first be conducted on the organization itself; its current strengths, weaknesses and market-set benchmark values for new product/service development cycles should be assessed, and then weighed against the potential benefits gained from the implementation of a new, development-oriented unit.

In addition, there should be a clear idea of the availability of human and other resources for the implementation of a cross-functional team. In service businesses and in particular those with light-weight organizations backing them up, people tend to work on a need

basis; while their actual function might be marketing, they are far more likely to come into contact with members of technical staff than could be argued in cases of large manufacturing companies – where most cross-functional interaction is performed at managerial level. This is due to the intangible nature of services, which not only prevents them from being stored for further usage, but also means that they are consumed and produced at the same time: If a sales employee of a telecom company cannot answer at least the most rudimentary of customer enquiries regarding the company products and/or services, the perceived customer service level of that particular company will most likely experience significant setbacks time and time again.

Finally, an organization should be able to engage people from different units in discourse with their cross-functional counterparts even without an actual cross-functional team in place. A question should therefore be asked by senior management: Is a new organizational unit really what we are seeking, or could the same benefits be gained from simply addressing the barriers preventing efficient flow of information between functions? More often than not, creating and providing personnel with incentives to have more interaction – both professional and personal – from people from different parts of the organization requires far less organizational renovation and resources, and in many cases it may prove to generate exactly the results the top management was going after. At any rate, encouraging inter-departmental information exchange through informal channels will enable the organization to pursuit cross-functional teams or similar practices more efficiently in the future.

6.2 Limitations and suggestions for further research

This study discusses the applicability of cross-functional team practice in the context of a Finnish telecom SME. While the author has pursued as extensive a study as feasible within allocated resources, and the research methodology and data analysis as such are sound, the sample size and transferability of the findings can both be subject to criticism, particularly from scholars of quantitative research.

In order to test and validate the findings presented within this study further, it is recommendable that a broader study be conducted within a wider sample of Finnish telecom operators – local as well as national. Particularly recommendable is to carry out a quantitative study comparing the innovation propensity of Finnish telecom operators of

various sizes, and perform an analysis on the type of organizational structure in place and its correlation with the frequency and speed of a new product/service development project.

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Appendices

Appendix A

The following is the interview framework used when conducting interviews within the case company:

Background questions

- Current position?
- How long have you been working in similar functions?
    - How long have you worked for your current employer?
- What kind of positions have you held previously?
- What kind of educational background do you come from (business / technical)?

Interview

- How many years (approx.) of experience do you have in active project work?
    - What kind of projects have you undertaken?
    - What kind of roles have you played in these projects?
- What kind of experiences do you have regarding working with people from different functions?
- Have you engaged in purpose-built cross-functional team projects?
    - What kind of functions have been represented?
- What is your perspective on cross-functional processes?
    - What kind of possibilities does it provide?
    - What kind of challenges does it provide?
- In your current employer organization, do you think cross-functional teams should be the standard approach to new service development projects?
    - Why/why not?
    - What specific benefits / challenges do you see in their application?
- Based on your personal view, has increased cross-functionality created new ways of doing things?
    - What kind of effect has it had on individuals' innovation capacity?
    - What kind of effect has it had on the organization's innovation capacity?
- What kind of effect has participating in a CFT project had on their members?
    - Have the respective employees been valued differently by peers?
    - Has there been some specific impact on individuals' belongingness to the organization as a whole?

Appendix B

Below is a list of interviewees. In order to maintain anonymity of the people, only interview date and interviewee position within the case company are provided.

INTERVIEWEE	POSITION	INTERVIEW DATE
A	Executive	10.2.2012
B	Manager, *Sales*	29.4.2012
C	Assistant, *Sales and Services*	30.4.2012
D	Manager, *Product/Service Development*	30.4.2012
E	Project worker, *Product/Service Development*	30.4.2012
F	Manager, *Services*	30.4.2012