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LEGO teams

A Case Study of a Software development company comprising part-time professionals, catering to small-scale software requirements

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Abstract

Software development is an industry with an ever-growing demand. There are ample companies that cater to this demand. However, more methods of catering to this demand are emerging every day. One specific model of business is experienced professionals who have substantial technical expertise using their available time to create small-scale software and earn extra. However, this method has some innate difficulties like on-time delivery, part-time employee turnover, and working strictly in an online environment. Managing such a team who does not have full-time work commitment and satisfying customers with successful delivery is challenging. This study is to analyze the most impacting factors contributing to successfully managing such a team. A software company was partnered with to analyze this case study to gain pragmatic insight into the subject.

Keywords – Virtual teams, Online work, Part-time employment, Experienced professionals, Project Management, Project Management Methodology

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1. Introduction

Starting from the dot-com bubble in the late ’90s, the software development industry has been exponentially growing (Wollscheid, 2012). The growth widely spread to a point where software development companies have become specific on industries and their finer disciplines when creating software such as E-commerce, capital markets, pharmaceuticals, administration, data storage, etc. The software solutions may be presented as software & app development, web design & development, e-commerce, digital marketing, branding, and more innovative methods. A more astounding tendency in software development is the emergence of new small-scale companies as start-ups or subsidiaries of established companies. There are similarities and differences in the progression of these new start-ups, and more software development companies are being established every day. While the success rate of these newfound companies is a separate study, one thing can be deduced from this: the high demand for software.

DesignRush has released its Q3 industry report examining the demand for agency services in the digital arena. The report looks at how the changing landscape of the global health crisis has impacted demand for software. Research conducted using 500 agencies indicates how agencies have seen clients' behaviour change during the COVID crisis. 81.8% of software and app development companies reported an increase in demand for at least one area of their services. 91.2% of website design and development agencies reported an increase in demand for at least one area of service (Design Rush, 2022). The increase in demand for software can be investigated to a granular level when considering small-scale software development. The de facto increase in demand for this small-scale software could be identified during the pandemic when most of the shops and services which had physical office spaces turned to online shops. Many businesses moved to have an online showcase of their products and services. Consultation on Information Technology (IT) solutions were also turned into online meetings due to limitations on air travel in contrast to the on-site consultations. Now, the post-pandemic environments are encouraging in-person interaction, yet business owners have grasped the cost-effectiveness of transforming their businesses to digitalization. According to SkyQuests recent report the number of small

businesses that use accounting software increased by 54% between 2018 and 2021. “Accounting software typically costs between $100 and $1,000 per year, which is significantly cheaper than hiring a full-time accountant” (SkyQuest, 2022). Most of the off-the-shelf small business software is equipped with add-in/ opt-out features to customize according to business needs. The Allied Market Research report reveals that the software market for global business analytics generated $45.04 billion in 2016 and is estimated to reach $86.45 billion by 2023 (Allied Market Research, 2022). Furthermore, Allied Market Research has forecasted that the global Big Data and Business Analytics Market will be generating $684.12 Billion by 2030 and one of the leading causes for it is the increase in adoption of demand for cloud-based big data analytics software among SMEs. Work-from-home adaptation by organizations in sync with lockdown measures has caused the need for big data and business analytics to increase during the Covid-19 pandemic.

According to the article by Jose Santos on Project-management.com, small business software is any solution or tool that supports and operates efficiently, for a small-scale organization with fewer resources (Santos, 2022). Such digital solutions help business owners to manage many aspects of the business such as operations, high-level strategic planning, office administration, resource planning, accounting, and even client-facing. The simple software architecture and ease of use in this software are complemented by the ease of setup, intuitive design, and affordability (Santos, 2022). Another advantage will be the scalability of the architecture, which is having the ability to expand in volume when the business grows.

Another area of interest is the increase in Business Intelligence. All websites asking for permission to present a ‘cookie’ when the website is visited, have the target of gaining statistical data on potential customers. The companies work their best to turn these leads into a sale. For example, currently, even a small-scale pharmacy displaying contact details and the most basic information regarding the business in a webpage would like to know who will be interested in their local business and why others are not. Business intelligence has become far more important with the addition of Artificial Intelligence to business.

The high demand for software solutions is clear and is thriving now more than ever. This study will check the most influential factors for successful team management of small-scale software development teams comprising part-time professionals. Therefore, the project teams in consideration, by nature, work in online environments. Even when there is a physical space for interaction, Software Development Life Cycle (SDLC) monitoring platforms (Azure, Atlassian JIRA are some example platforms) are being used by project managers for team management. During the pandemic, software development companies consisted of the necessary hardware, software, and methodology to 'work online', and adapted to the pandemic situation faster than other industries. Working online is a foundation factor in this study. The next is the scale of the projects undertaken by the companies. The complexity of the project shapes many aspects of the project deliverance. Resource allocation, project duration, tools and licenses needed in using the software as other peripheral systems, expertise needed, and credibility of the company to deliver/ support during and after implementation are some of the facts which are tied to the complexity of the project. Many established companies like airlines have complex requirements which demand software companies with a higher resource capability and often check the percentage of the "benched employees" during the vendor assessment. Therefore, there are limitations for start-ups or smaller companies in terms of obtaining such projects. The other aspect of the concerned subject is the necessary level of creativity in software products. As discussed before, most small-scale software requirements come from companies requiring a solution for a limited number of issues that emerged contemporarily. The need for a product showcase, educative software, alerting the user with the right information at the right time, optimizing company operations, managing the business, and enhancing profitability through business intelligence are a few examples of requirements for small-scale software. Projects may require an even higher level of creativity due to the nature of the requirement, especially when start-ups with new ideas in various industries reach out for IT solutions. All the above facets of the subject matter have been researched by many scholars and valuable conclusions have been made on the factors which influence the success of the projects or the companies which deliver them. The foremost focus here would be to identify the important factors when managing a team with part-time professionals, working virtually, in limited time, and with limited scope.

In this study, a major emphasis is given to the part-time employment nature of the employees involved. These part-time employees constitute the “LEGO”s in this study. Part-time work is not a novel concept. The trend had been developing over time and has become an important human resource management method. There are previous studies examining the trends in part-time work. This study intends to discover the factors of management of part-time workers in the case study context in consideration. The study concentrates on the part-time work nature from the perspective of the employer or the manager of the team. The motive of this study is to discover the real-world critical factors of such virtually met part-time employee management through partnering up with a company as a case study.

1.1. Purpose

The main purpose of this study is to act as a preliminary study to gain better insight into the team management of part-time professionals in a virtual environment. The result of this study is intended to be used for a business of delivering software products/ services. The study of such business encompasses more aspects such as financial plans, legal aspects, sales & marketing, and human resourcing as depicted in diagram Figure 1. However, these other aspects will not be assessed in this study. Many entrepreneurs have similar businesses registered to cater to small-scale software demands. Foremostly, to work in their extra time while doing a full-time job. The main struggle in the business can be identified as the management of the implementation team and growing credibility among clients. This study will be conducted to fill this gap as a starting point for the said business. Despite its struggles, the companies following this model have a higher profit due to its thin management layer and a flexible work environment for professionals who work on part-time projects. There are some apparent problems entailed with such team management such as high employee turnover and gaining the best outcome from the professionals. However, the goal is to find the most important factors including and beyond these factors. The study will be considering the management of the team as a whole rather than individual team member behavior.

There will be a possibility of having greater business gains if professional talent can be fitted and unfitted to project teams as 'LEGO' pieces do. There will be many aspects to study in this regard, such as trends of virtual team management, talented professionals joining part-time work, reasons for high or low performance, salary structure, time management due to part-time working, and many more. This study will reveal what to focus on the most in team management, of the teams belonging to the specific context in consideration. This is similar to understanding the shape and dimensions of the LEGO piece so that it fits with any other piece as required. This study will act as a preliminary guide to managing the project teams to implement IT solutions. Also, section 11.2.3 would help the working professionals with facts to consider when moving to part-time employment.

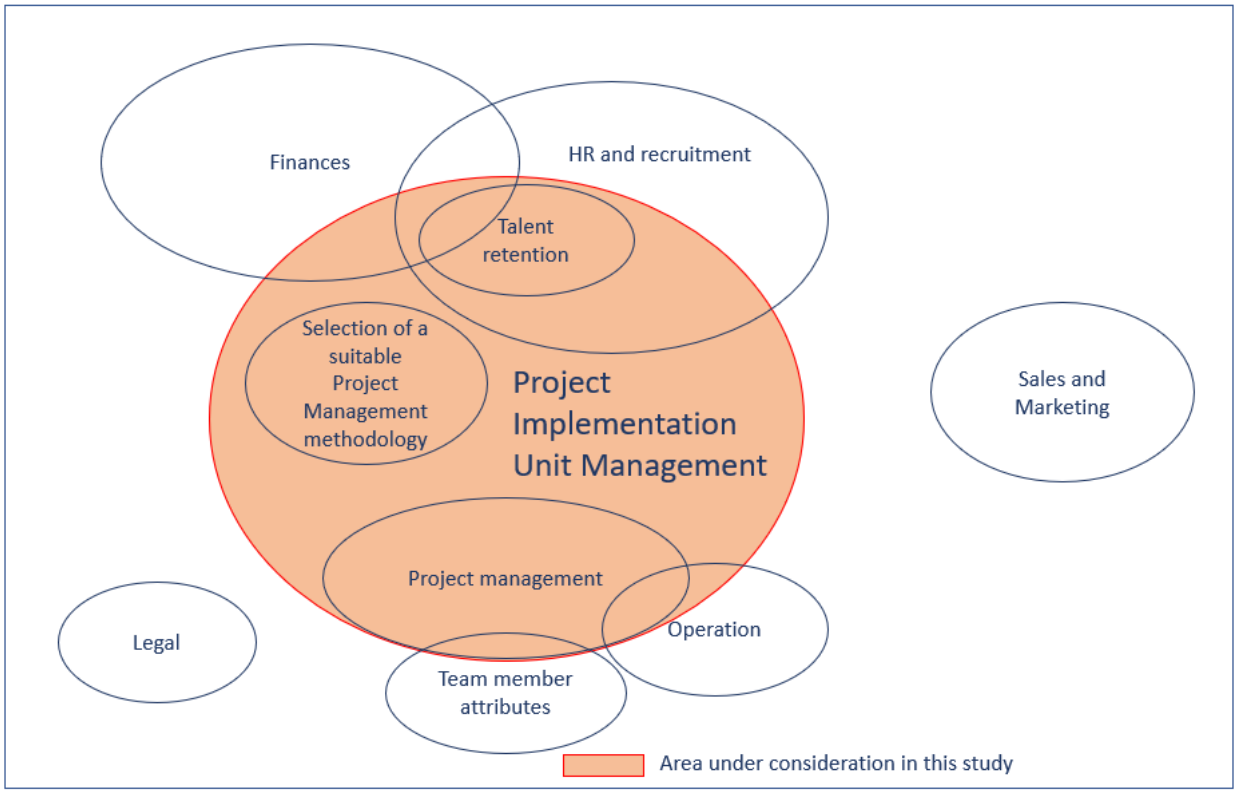

Figure 1 Areas covered by this study

1.2. Introduction to the Case Study Company

The company in consideration is Hypercent Corporation. Hypercent has 2 main entities deployed, one in Sri Lanka as Hypercent Technologies Pvt Ltd and in USA Los Angeles as Hypercent Associates LLC. The first was Hypercent Associates founded in 2005 in Los Angeles as a private entrepreneur providing web solutions to clients. The company gradually grew in employee size and the complexity of the projects undertaken. Hypercent Technologies was started in 2007 in Sri Lanka, primarily to manage the compensation of the Sri Lankan employees who came on board. The management of the employees was done completely online. In 2015 the company operations were started in an office in Colombo Sri Lanka, having a full-time staff. After 5 years of operation, the company rolled back to complete online management again. Hypercent had a pool of part-time working staff throughout the company's history. The part-time employees were selected through headhunting and professional references. The project teams primarily consist of professionals who are experts in their fields working part-time. The company has experienced many dynamics of part-time employee management in the software industry. Currently, the company continues to operates online delivering many software solutions for both the US and Sri Lanka markets.

Figure 2 Hypercent Logo

The company was selected due to its part-time employment, virtual operation, dynamic nature of the company size, and its history of catering to many creative software solutions. The collective experience of the company is an on-point source for the goal of this study.

2. Developing the Research Question

The subject of virtual teams has been well examined through much research, foremost during the past decade. The subject has been further evaluated during the pandemic as the virtual project became a necessity rather than an option. In the dissertation 'The online project team competency model – a construct validation for business practitioners' by Patrick B. Wilson and Edward C. Eaton, the following research gaps were introduced for further studies.

1. Do high levels of interaction between online project team members within online spaces indicate high performance?
2. What impact does culture have on an online project team's high performance?
3. Does funding for an online project team impact a team's high performance?
4. How does executive sponsorship impact an online project team's high performance?
5. Are online project teams which utilize online project team support personnel, more high performing?
6. Does organizational change within corporations impact high performance within online project teams?
7. Do online project teams which utilize face-to-face kickoff meetings more high performing?

(Wilson & Eaton, 2008). These suggested research recommendations prompted many factors affiliated with further research.

Research done and published by Bakker, Boros, Kenis & Oerlemans (2013) on the influence of project duration on team performance in the research '"It's Only Temporary" - Time Frame And The Dynamics Of Creative Project Teams', reveals interesting behavior of the team based on the following 4 factors. Time orientation, task immersion, processing of information, and team conflict and cohesion. The paper suggests future research on further dissecting the broader nexus between temporariness and social structure. The social structure of a project team can be viewed from many angles. One facet is the nature of the employment of the team members. Some companies have in-house project teams where a stable eco-system for project management is nurtured by having trainees, employees from different designations, and assistant PMs, trained

and groomed to take on newer tasks and exert leadership in contingencies. In this case study the project team primarily consists of part-timers and the above-mentioned research gap could be partly satisfied. The paper 'An analysis of leadership methodology and job satisfaction among virtual teams' by Michael Charles Hitson (2008) suggested that future studies may be continued on the variables of the leadership of the recruiter organization, job satisfaction within the virtual environment, focusing on a very specific industry, location, job responsibilities, or age group. Which aligns with the specificity of the case study considered in this study. The paper 'Effective strategies for managing continuous consultant turnover in IT project teams' by Nick Jury (2018) mentions the research gap of strategies Project Managers use to mitigate and reduce the negative effect of high consultant turnover at other sites.

The most fitting mention of a research gap could be found in the dissertation 'Now you see them…now you don't: Toward a greater understanding of virtual team effectiveness' by (Peters, 2003) which suggests further studies in building new models for work teams by identifying factors that result in effective outcomes for these types of teams as well as identify the conditions under which the different outcomes occur. Professionals have been involved in part-time jobs for a long time, but less attention has been given to the subject in the academic sphere. The foundations laid in this paper will reveal real-world factors which have been tested and experienced by the project leaders, satisfying the existing research gaps whilst stemming a new trend of research towards refining the needful in the considered business model.

Research Question: What are the key factors contributing to project team management, in virtual project teams comprised of part-time professionals?

3. Delimitations

As mentioned in the justification for the study, this paper will be a preliminary step for refining working in software development for part-time professionals in the online environment. However, the study will be strictly limited in certain aspects. There will be an inherent limitation

of the attempt to generalize the results, considering the nature of the study, which is case study research. Some of the factors depend on the brand image of the company, the business planning of the higher management, external factors like economic well-being in the sphere the business operates, the strength of HR and recruitment of the company, and the short-term and long-term goals of the company. The above-mentioned are all generalized in the studying company context in this study.

Another delimitation of the study is restraining the data gathering to the company employees and professionals who have worked in a similar context, without reaching the customers of the company. The research could have been done by reaching out to the customers to verify whether the projects were delivered successfully to customers. The reasoning for this limitation can be threefold. Firstly, the company is having many customers who continue their business with the case company. Gaining feedback and improving is part of the business itself which should be handled delicately as the feedback may be on the business structure, employees, or cost. Therefore, reaching out to clients through an external study like this, which is expected to publish the results to the public may harm the business relationships of the case company. Secondly is the time constraint. The time available for completing the thesis is limited and obtaining customer verification and concerns will be time-consuming, delaying the expected delivery of the study. Thirdly, the objective of this study is to gain clear visibility on the factors which will help to formulate better project teams within the context of the case study. Therefore, the study will be focusing on structuring a business internally from the experience of the case company. The case company will be the judge of the success of the project. The measurements used by the company for success will be inquired from the company in the interviews.

The study will not be assessing the factors of legal obligations, sales and marketing concerns, operations, and parts in human resourcing like hiring and firing concerns in this study. These are intended to be for further research.

4. Thesis Structure and Theoretical Base

The structure of this study is based on the methodology used. The literature review will discuss the important factors of team management. Factors found most relevant for the study will be listed in a master list of factors and will be processed in the systematic way mentioned in the methodology. The resulting factors revealed at the end of the research will be discussed in the conclusion and the discussion.

Since this research is stemming out of a case study there was no exact matching previous research to be found. Therefore the context was divided into 3 main parts such as, Factors affecting virtual teams (section 11.1), Virtual part-time employment(section 11.2) and Difference between hiring fresh graduates and experienced professionals (section 11.3), for the necessity of the study. Section 11.1 used Morrison-Smith & Ruizs' 'Challenges and barriers in virtual teams: a literature review 2020' to gain insight into the varied aspects of virtual team management. Section 11.3 'Selecting the right project management methodology' was primarily based on the Project management methodologies: selecting, implementing, and supporting methodologies and processes for projects book by Jason Charvat (2003). 11.2 and 11.4 sections had adaptation of the works of Martin & Sinclair (2007) and Rynes, Orlitzky, & Bretz (1997) respectively. The works of Charlotte & Clare, (2018), Hollenbeck, Beersma, & Schouten (2012), and Kalleberg (2000). Selecting the right project were helpful to outline the necessary knowledge area for part-time employment trends management methodology part was mainly used to make the reader aware of the varied methods which can be used in managing the projects.

5. Research Methodology

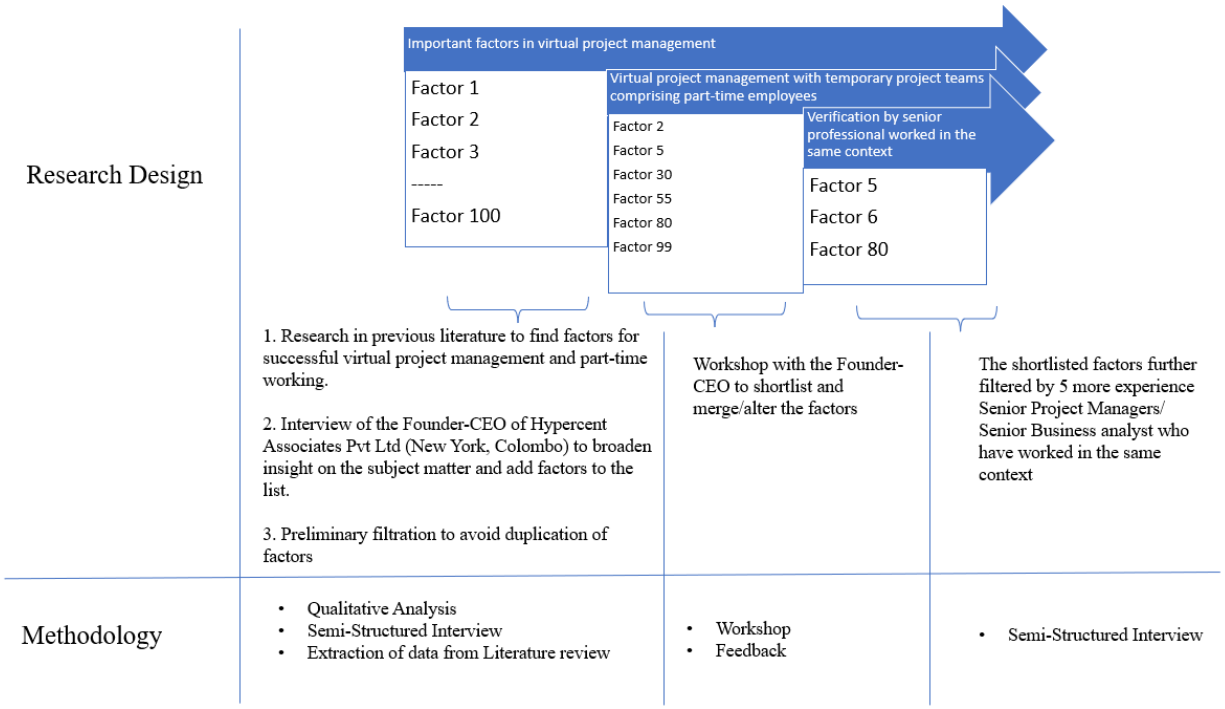

Figure 3 Research Design and Methodology Diagram

There were two main methods used in this thesis. Before moving to the analysis section, it is important to clarify the methods used in each stage of the research and how they served to help obtain the right findings. Multiple methods like interviews, observations, and questionnaires can be used when analysing the attributes of managing a project team. The main sources which were used for reference for this thesis had different methods used. Namely literature research, surveys, questionnaires, and action research. The methods used in each stage will be explained hereon.

Stage 1 has 2 main activities. Stage 1 literature research is the first activity. Literature research is an effective mode to assess the state-of-the-art, fragmented information of a certain discipline to be ahead of research (Snyder, 2019). The main goal here is to gather as many relevant factors as possible. As mentioned in the Thesis structure section since there was no previous exact match for this context, the factors were gleaned from previous literature on the considered areas in a meticulous manner. Each fact included in the list of total factors was chosen having high value to

the context. Some of the other factors mentioned in the literature, although they made some close resemblance to context were discarded.

Stage 1 second activity is the preliminary interview of the CEO of Hypercent. A semi-structured interview is used to gain information in an unfiltered and non-manipulated manner (White, 2007). This activity aims to grasp enough details of the case study company and expand the factors list by having the case study company's CEO's perspective right at the beginning stage.

Stage 2 consisted of a workshop with the CEO of Hypercent on selecting the right factors from the total list. Workshops are considered a qualitative method. Workshops provide researchers the platform to explore relevant factors of a domain by providing means for understanding complex knowledge to the participants. This makes workshops highly meaningful negotiation between researchers and participants (Ørngreen & Levinsen, 2017). Here a brief explanation of the factors listed will be provided to the CEO. In this manner, the CEO could revive any missing factors from his addition to the list and shortlist the master list having an overall idea of the knowledge from previous literature.

Stage 3 is the stage of affirming the factors through the current and previous staff of the case study company. Some of the previous employees have worked in several similar settings of employment foremostly in positions such as Project Manager, Lead Business Analyst, Senior Tech Lead, Software Architect, etc. The verification would be done through semi-structured interviews. The interviewees have the option to choose from strongly disagree to strongly agree while commenting on factors as necessary. Hereby they were able to share their perspective and experience on the researched context. The target participant headcount is 5.

6. Literature review

Finding the most important factors in team management has been a subject with ample research done over time. However, each situation, participants, and projects are different with each other, most findings are unique to each research. Even the same team working on several similar projects over time has a different context each time due to the increased experience in both the knowledge of the subject matter and team cohesion. Therefore, the analysis of previous work on finding the contributing factors can only be done by trying to group similar situations/ attributes of the team management by having keen observation of the context in session. Such three main categories of key concepts are examined in this study.

1. Factors affecting virtual teams
2. Factors affecting part-time employment
3. Differences between recruiting fresh graduate's vs experienced professionals

6.1 Factors Affecting Virtual Teams

"As part of ongoing cost-cutting measures under the new owner and CEO Elon Musk, Twitter is shutting down its Seattle offices and its Singapore officers, instructing employees to work remotely. That's despite Musk's earlier claim that remote workers are only 'pretending to work and banning remote work at Twitter upon taking it over in early November" (Tsipursky, 2023).
There has been research done on virtual team management extensively as it had been a concept on-practice and has been evolving, especially with the advancement of technology and related software. In the book" Culture, communication, and Conflict: a review of the global virtual team literature" (Scott & Wildman, 2015), virtual teams are defined as" geographically distributed collaborations that rely on technology to communicate and cooperate". The book expresses that the best case to describe and analyse virtual teams is by examining global virtual teams which would be a contemporary necessity. Virtual teams can be compared with co-located teams to

compare teams' behaviour. However, such a comparison will not be done in this study as the virtual nature of the teams is an essential element rather than a variable to test.

Virtual teams have many benefits in terms of productivity. The main benefit is the capability to include experts in the project team, regardless of their physical location (Hinds & Kiesler, 2002). This will support the quality of the implementation and the result of the project or operation. Also, the sponsor or the team leader gets the benefit to optimize the team beyond the expert knowledge, into having good team-playing personnel in the team increasing productivity (Kirkman, Rosen, Tesluk, & Gibson, 2004). Virtual teams save the traveling costs incurred by having such experts in-person on-site. It implies that virtual teams provide a good solution for the current increasing globalization. Communication platforms such as Zoom, Skype, Slack, Microsoft Teams (Morrison-Smith & Ruiz, 2020), WhatsApp, and Webex keep evolving according to the current needs of virtual teams. A greater emphasis is made on the technical tools used for virtual collaboration. Adaptation of tools has made virtual teams aware of others' timings (Bodemer & Dehler, 2011). It helps when working in different time zones and in scenarios of adjusting timing according to daylight saving. This in return decreases the" process-loss time" in teams. Furthermore, it has been researched that the effectiveness of effort visualization is greater in teams with a majority of low conscientious members (Glikson, Woolley, Gupta, & Kim, 2019).

There has been research done on various factors affecting virtual team effectiveness. Olson and Olsons' research on several occasions, introduced 10 challenges hindering virtual teams because of the physical distance between team members. Alignment of incentives and goals, trust among team is more difficult to establish, awareness of colleagues' tasks and their context, no motivational sense of presence because of others, the need for explicit management, the level of technical competence of the team members, the level of technical infrastructure, nature of work, common ground of the team members, and the competitive/cooperative culture (Olson & Olson, 2006) are the 10 factors and these will be added to master list. Despite the purpose or the conclusion of these research, these factors had been discussed either directly or as supporting

factors for reaching an objective for better team performance. These factors have been reaffirmed by other researchers as well. Isolation of the team members can lead to a hindered performance in virtual teamwork (Casey & Richardson, 2004). The importance of awareness within the team factor can be defined as 'an understanding of others' activities which provides context for one's own task (Dourish & Bellotti, 1992). Such awareness is essential to make sure each person's work is compatible with the overall deliverable of the group. It also avoids duplication of work (Olson & Olson, 2006). According to previous work trust among team members is considered a critical factor for team effectiveness, as it allows team members to seek help from each other, reduce conflicts (Choi & Cho, 2019) , create group functionality, and manage group activities. The trust factor in a virtual environment is further emphasized in (Cheng, Yin, Azadegan, & Kolfschoten, 2016) as it lacks contextual clues like facial expressions and tone of voice. The research 'Effects of four computer-mediated communications channels on trust development' (Bos, Olson, Gergle, Olson, & Wright, 2002) shows that the communication channels having the presence of body language, voice tones, and facial expressions like video conferencing makes a positive impact on faster decision making in virtual team environments, over email and audio-only channels.

6.1.1. Intra-Team Conflicts

Intra-team conflicts can be categorized into 3 types as interpersonal, task-based, and process-based (Jehn, 1997). Geographically distributed teams are prone to interpersonal and task-based conflicts. The notion of intolerance among virtual team members gets unidentified and unsolved for longer periods due to not having the ability to spot them during the short time frame of the virtual interactions (Armstrong & Cole, 1995). When working with teams dispersed geographically, the regional subgroups may provoke an us-versus-them attitude. Also, there is the issue of internationally dispersed teams not acting or feeling they work in one unit focused on the same goal (Armstrong & Cole, 1995). The reasons for such conflicts are identified as incorrectly interpreted communications, faulty assumptions and not being able to understand

the other person's context or situation due to the dispersed nature of the team (Herbsleb, Mockus, Finholt, & Grinter, 2000). These conflicts may result in erroneous decision-making due to limited information flow, delays in work, and non-resolution of task issues (Herbsleb, Mockus, Finholt, & Grinter, 2000) hindering project progress. However, as conflict mitigation methods, in Mortensen & Hindss' work (2001) (2005) suggests that having shared context, a shared sense of identity, task, and personal familiarity, and spontaneous communication preferably on video conferencing would be appropriate. Maruping & Agarwal (2004) add having team agreements regarding tasks and responsibilities would further resolve the issue. Intra-team conflict resolution will be added to the list of factors to be processed in this study.

6.1.2. Perceived Distance

Given that there are no barriers between two people, it can be deduced that communication among them is better and clearer as they are physically closer. The distance is usually measured in geographical displacement or time zones (Allen, 1984). Perceived distance is a personal sense of how far or near another person is. It inflicts a "symbolic meaning" of proximity beyond the physical distance and is proven to be having a greater effect on relationships and is important to global team management in virtual teams (O'Leary, Wilson, & Metiu, 2014). It is found that people create a closeness to each other through frequent communication, having a shared sense of identity, and synchronous communication (O'Leary, Wilson, & Metiu, 2014). "Software developers creating open source software feel increased levels of proximity because of the intense communication" (Raymond, 2001), and "team's national heterogeneity causes more impact to teams' closeness than the spatial distance" (Siebdrat & Ernst, 2013) are some proven conclusions to support the above mentioned concept. According to the context of this study, it will be more suitable to consider the factors tied to perceived distance like heterogeneity of the team and intensified communication, as a replacement for the opted-out fact of on-site team comparison. These will be added to the list of factors.

6.1.3. Nature of Work

Another aspect of virtual teams is the nature of work. This can be examined by categorizing it into two main parts namely loosely coupled work and tightly coupled work (Olson & Olson, 2000). The latter needs rich, frequent, routine, and non-routine communication between the team members. According to the context of this study, the work is mostly on small-scale projects, and such might not need integration of large numbers of work (specially in software development) but would be interdependent on the different aspects of the Software development Life Cycle. Hence managing the interdependencies between components of the deliverable will be vital (Schmidt & Bannon, 1992). However, according to the requirement of the project, the work can be complex in terms of technical knowledge and the resources needed. The high interdependence of work leads to more effort in communications (Marlow, Lacerenza, & Salas, 2017) and it would be a factor to be considered in the focused team management, this study leads into. Olson & Olsons' study (2006) reveals an interesting fact that experimentally, projects with virtual teams having tightly coupled work are less likely to be successful. However, tightly coupled work has also made the team members frequently interact and has resulted in knowing each other better and better support (Bjørn, Esbensen, Jensen, & Matthiesen, 2014). Loosely coupled work has the exact opposite behaviour. Therefore, it can be noticed that the impact of the nature of work can be differentiated according to the context.

6.1.4. Effective Leadership

Effective leadership is essential for maintaining quality interactions between the team members and this is one of the most difficult tasks in managing dispersed teams (Malhotra, Majchrzak, & Rosen, 2007). Research done on 101 virtual teams by Hoch & Koslowski (2014) about hierarchical leadership, structural supports, and shared team leadership in leading virtual teams concluded with several important findings. Hierarchical leadership is the formally designated leadership for leading the team (Ensley, Hmieleski, & Pearce, 2006). Structural support provides an indirect

influence on motivation and team behaviour (Bell & Kozlowski, 2002). It is the motivation to execute the project successfully through the strength of the structural agreements made or tools used. Shared team leadership describes the influence made mutually upon each other by collaborative decision-making and shared responsibility. (Day, Gronn, & Salas, 2004). It was found that the more virtual the team becomes, the less impact is done by hierarchical leadership has on performance. In contrast to it, team structure support has a growing impact on team performance as the virtuality of the team increases. Shared leadership is significantly related to team performance irrespective of the degree of virtuality (Hoch & Kozlowski, 2014).

In a virtual setting, effective communication becomes a key component of effective leadership. The research by Newman, Ford, & Marshall (2002) having 68 teams revealed that virtual team members' perception of the leader's effective use of communication has a positive relationship with team performance. Furthermore, it is the same when it comes to trust and team performance. Therefore, it is important to examine the leadership styles used by virtual leaders and assess the pros and cons of it.

Table 1 Leadership Styles table created through extracted data from 'Challenges and barriers in virtual teams: a literature review' (Morrison-Smith & Ruiz, 2020)

Leadership style	Description	Pros on Virtual environment	Cons on Virtual Environment
Transformational	This type of leader creates an environment to enhance the team member potential to the best. The team is inspired through motivation and giving them better individual attention. The team is intellectually stimulated.		Due to the virtual environment, this leadership style is considered less effective. This leadership style requires leaders to influence, and it would be difficult to implement it through online communication methods. Due to the online setup, the leader likely gets marginalized from authentically making any difference

Empowering	The power is shared across the team and a supportive environment is facilitated.	Helps influence team members' skills in situational judgment and increases virtual collaboration behaviours. This will ultimately increase individual performance.	If the team doesn't have the capacity to make good situational judgments, the project team may fail on becoming successful.
Emergent	Despite the formal designation of authority, emergent leaders exert significant influence over other members of a team.	This leadership brings several benefits. The individual is a responsible, well-organized, and conscientious character making good individual performance. At the same time, the person will be having positive relationships with team agreeableness, openness, and emotional stability.	
Shared	Leadership is shared, among multiple team members. Building responsibility and trust among the team members is mutually undertaken by these leaders.	Benefits of virtual teams such as emotional stability, and agreeableness increase. This has a positive effect as many in the team are taking responsibility for project success.	

Leadership styles are frequently discussed in prior works of virtual teams (Morrison-Smith & Ruiz, 2020). Also, there are attributes expected from the team members to successfully maintain these leadership styles for better performance.

6.1.5. Mutual Knowledge

” Mutual knowledge is the knowledge that the communicating parties share in common and know they share” (Krauss & Fussell, 1990, as cited in Cramton, 2001). In the works of Cramton special focus is made to identify how the geographic dispersion of team members affects having a common ground and the impact of new technologies on it. Mutual knowledge can increase comprehension as it expresses the knowledge of a team member who is aware of the level of awareness the addressees have on the same subject in consideration (Krauss & Fussell, 1990). This is a great benefit when it comes to virtual teams. It can reduce time spent on explanations and the team is well aware of the context. Cramton's (2001) study shows 5 possible outcomes in case of failure of mutual knowledge; failure to communicate and retain contextual information, unevenly distributed information, difficulty communicating and understanding the salience of information, differences in speed of access to information, and difficulty interpreting the meaning of silence. The research findings show that the team member differences can include the distance and time to the office of each dispersed member of the team, how advanced or low quality the equipment used by each member, how standards are being perceived, local holidays and customary practices, local workplace conditions in terms of coworkers, local emergencies, cultural differences. These differences are needed to be addressed for better team collaboration.

Another concept that has some similarities to mutual knowledge is the impact of having shared mental models. The earliest works on the subject were done by Kenneth Craik, proposing that people have their own small-scale interpretation of how the world works. Later research on the matter by Philip Johnson-Laird pointed out that it is a mechanism of reasoning for their understanding of the world (Natalie A. Jones, 2011). However, the concept of interest, which is the impact of shared mental models on virtual teams was researched by Schmidtke & Cummings (2017) which revealed that as the teams become more and more virtual in their interactions the mental models become more complex. This tendency would be a negative impact on team cohesion. Accurate and similar mental models help reduce the negative effect of team

behaviours. The research also provides remedies for this tendency, such as having specialized training and temporal stability. Temporal Stability is discussed in 6.2.2. section.

6.1.6. Team Member Attributes and Characteristics

Cultural diversity is a major fact impacting the performance of the team. It had been researched that culture does not frame the same sense as nationality. An attribute in cultures that have a major impact on team performance is individualism & collectivism. Collectivist cultures give prominence to team needs, beliefs, and goals rather than the individual (Morrison-Smith & Ruiz, 2020). Collectivism branches out into 2 categories as vertical collectivism and horizontal collectivism. Vertical collectivism accepts inequality in the team and horizontal collectivism stress on the equality of the members (Singelis, Triandis, Bhawuk, & Gelfand, 1995). Individualistic cultures place the needs, beliefs, and goals of the individual over team as a whole. They accept and prefer working asynchronously and show openness and directness in their conversations (Hofstede, 1980). Another interesting observation made in individualistic cultures is the response to 'ambiguous messages. This is considered to be an indicator of trust when working in virtual teams. In previous research, it had been found that members from individualistic cultures are prone to trust other team members in a virtual setup more than members from collective cultures (Morrison-Smith & Ruiz, 2020). Individualism also breaks down into vertical and horizontal individualism. Vertically individualistic means the member behaviour prioritizing own goals while supporting hierarchical differences. These members are not emotionally attached to the groups like the collectivists. Also, they are likely to adopt virtual technologies and use asynchronous methods of communication when required (Kramer, Shuffler, & Feitosa, 2017). Horizontal individualistic members prioritize their self-interest while considering equality among their teammates.

These characteristics are important for analysing the composition of the project teams. However, according to the context of the study, the teams primarily consist of part-time professionals.

Therefore, there is less chance of having a selection of the team members depending on their characteristics. Furthermore, there can be members from different cultures working on the same project and the management of the team must be done irrespective of the cultural background. More similar characteristics of virtual team members were explained in the" Challenges and barriers in virtual teams: a literature review" (Morrison-Smith & Ruiz, 2020). Long-term short-term orientation, contextualizing (high context/ low context cultures), effectiveness/ neutrality of emotional expression, perceptions of gender roles, uncertainty avoidance, perceived diversity, language preferences, language proficiency, and interpretation are some mentioned in the aforementioned research. Due to the reason that this study is limited to facts of management of the part-time virtual teams, the characteristics of the team members will not be added to the list of factors to be considered.

6.1.7. Work culture

As mentioned in the empowering leadership style introductions in section 11.1.4, there are effects on the teams by the level to which autonomous decision-making is practiced. Similar attributes should be assessed in creating a sustainable and profitable work culture is important. Goal setting is an essential task for any team. The team not having an overall and thorough idea about the expectations can lead to serious problems (Olson & Olson, 2000). Team members' perception of time is another fact to consider. Working in different time zones and the value system in each site would be different. Temporal discontinuities caused by differences in time zones cause impact differently according to the location (Saunders, Slyke, & Vogel, 2004). The attitude of being punctual, and the reaction to lateness differs from one place to the other. "Tensions may arise between workers at an American site that views time as a scarce commodity and perceives time as being something that can be spent, wasted, or lost, and collaborators at a Japanese site that view time as a cyclical, recurrent entity that is in unlimited supply" (Saunders, Slyke, & Vogel, 2004). Another matter for consideration is the hours of work. For dispersed teams, especially when having collaborators from different cultures, working extra hours may

appear as an issue. As discussed before setting goals and making greater awareness of the expectations would slightly help the situation.

There are ample more facts that need to be analysed on work culture in virtual teams. Most of the facts mentioned in previous literature on this matter are tied to the team member attributes. Therefore, those will be delimited as per the purpose of this study.

6.2. Virtual Part-time employment

As mentioned in the purpose section the project teams in consideration in this study are comprised of part-time professionals. The most important ’selling point’ of this operation as a business is the ability to have the expert opinion of experienced professionals in the industry for a lower cost. This section will discuss the trends of such part-time work. Previous studies were conducted on several aspects of part-time work. Difference and adaptation of part-time work between men and women, professionals' adaptation to part-time work nature (Charlotte & Clare, 2018), the satisfaction of job and life on gender and responsibilities of life taking the hours of work into account (Ours & Booth, 2007) are few aspects researched. The literature review on ‘Nonstandard employment relations: Part-time, temporary and contract work’ (Kalleberg, 2000) reveals much information on part-time work which will be used to refer to the necessary for this study.

6.2.1. Part-time employee turnover

The most common issue in having part-time employees is the turnover rate. Employers must make an effort in recruitment, hiring process, and training. The works of Sinclair starting from “Full-time and part-time subgroup differences in job attitudes and demographic characteristics” (1999) to later research had a categorization used in identifying the part-time workers which are

depicted in Figure 4. This depicts that part-time workers' behaviors change concerning the group they belong. These categories will be listed as factors in the master list to find the most suitable category for the considered project teams in this study.

Category	Income contribution	Other group roles and characteristics
Primaries	Earn more than 50% of household income from the job in question	May have spouse, childcare, or other significant life roles
Older married supplementers	Earn 50% or less of household income from the job in question Job supplements other source(s) of household income (e.g., a spouse's job or pension)	Married adults, not in school; no other job. Few children at home
Younger married supplementers	Earn 50% or less of household income from the job in question Job supplements other source(s) of household income (e.g., a spouse's job)	Married adults, not in school; no other job. Several children at home, mostly female
Single supplementers	Earn 50% or less of household income from the job in question Job supplements other source(s) of income (e.g., alimony, pension, investments, social security (Sherman, 2004)	Unmarried adults, not in school; no other job
High school students	Job provides discretionary income (Hannah & Baum, 2001)	Currently in high school Mostly 14-18 years old Limited family responsibilities
College students	Job provides discretionary income and/or school-related expenses Feldman (1990)	Currently attend college Mostly 18–25 years old; 32% are over 25 Limited family responsibilities
Part-time moonlighters	Also receive household income from another PT job	Hold other PT job
Full-time moonlighters	Main source of household income from a FT job held by PT worker	Hold a FT job in addition to the PT job

Figure 4 Part-time employee categories - extracted from Sinclair, Martin, & Robert, 1999 "Full-time and part-time subgroup differences in job attitudes and demographic characteristics" research

It is found that a 50% turnover rate of part-time students in a certain duration is less troublesome compared to the same rate of primaries (Martin & Sinclair, 2007) which indicates a critical factor in the project team composition. When it comes to employee retention, it is recommended that companies should consider the team composition (the profile of the part-timer including the financial and personal situations) rather than relying solely on the industry- or region-wise data (Martin & Sinclair, 2007). Some other aspects to consider of the turnover nature will be schedule

flexibility, payments, and leadership support for the retention of part-timers (Martin & Sinclair, 2007).

In 'Typology of the part-time workforce: Differences on job attitudes and turnover' (Martin & Sinclair, 2007) it has also mentioned that the part-time groups with a fixed commitment like students and moonlighters have a much more alignment towards turnover predictors which are job satisfaction, organizational commitment and economic quality of alternative employments. Furthermore, this tendency is much similar to the turnover predictors of full-time employees. Understanding this part-time group turnover behavior will benefit employers to predict their resource needs.

6.2.2. Temporal stability

Temporal stability concept was introduced in the 'Beyond Team Types and Taxonomies: A Dimensional Scaling Conceptualization for Team Description' study (Hollenbeck, Beersma, & Schouten, 2012) indicating the effect imposed by team members working together in the past and the belief of working together in the future. This is common to all virtual teams despite having part-timers or full-timers. It is more relevant to discuss it in the part-time employment section as there is a high level of turnover (Martin & Sinclair, 2007) and temporary working nature in employment of part-time employees which aligns with the context of this study. In the research" A Time to Lead: Changes in Relational Team Leadership Processes over Time" (Horila & Siitonen, 2020), 3 project teams were tested on the attributes of temporal stability. The composition of the teams can be found in Table 2. Teams B and C expressed lending support, flexible work environment, encouraging others, and shared leadership. However, a member of team A has expressed that members are not looking for a high level of cooperation. Instead, they try to gauge other members' availability and competencies better. Furthermore, team A had mentioned that interactions in the early stages would be beneficial to familiarize with the team members yet foremostly clarify work-related rules and norms.

Table 2 Research of 3 teams for Temporal Stability - Extracted table from (Horila & Siitonen, 2020)

Team	Team A (Ten interviewees)	B (Four interviewees)	C (Four interviewees)
Temporal stability	Temporary project team; the project started 2 years prior	Ongoing team; history in some form for several years	Ongoing team; first members working for 15 years in the team
Membership structure	Senior and junior employees; membership fluctuates due to resourcing	Senior employees; membership fluctuates due to personal motivation; Boundaries	Senior and junior employees; memberships stable
Level of distribution	Members were distributed in two Finnish cities	Members are distributed in different locations in Finland	Members were distributed in two pairs in Finland and Russia
Technologies used	Video conferencing, chat, telephone, project management software	Video conferencing (audio, video, chat), email, intranet	Video, chat, and voice call

6.2.3. Professional transition to part-time employment

In this section, a paper published by Charlotte & Clare (2018), ' The transition to part-time: How professionals negotiate 'reduced time and workload' i-deals and craft their jobs', is used as a base for gaining knowledge and for gaining facts. The paper contributes to the Idiosyncratic ideals (I-deals) theory by introducing a new category 'reduced time and workload'.

I-deals is defined as" personalized employment conditions individual workers have negotiated, which could be used as a tool to manage talent resource" (Rousseau, Ho, & Greenberg, 2006), which is a very closely related area of part-time work that is in consideration for this study. When assessing part-time work, it includes variations such as labour jobs, jobs needing physical presence, but no considerable labour needed, and online work. This study is most interested in online work and the decision taken by experienced professionals to move towards part-time employment. Obtained through expert opinion, 'Experienced hiring versus college recruiting:

Practices and emerging trends' (Rynes, Orlitzky, & Bretz, 1997) research define experienced hires as college-educated individuals with two or more years of post-college work experience. The ability to adjust the time committed to work at different stages of life is a common notion of employment. However, it is coupled with the sustainability of their careers. Monique Valcour (2015) has researched this matter with much information on the facts related to experienced professionals having deviations from their existing job to a more sustainable working arrangement. The primary concerns in such transition are assessed from the perspectives of the employer and the employee.

Table 3 Perspective of Employer vs Employee on career transition – Created from data extracted from Monique Valcour, 2015 Research of 'Facilitating the Crafting of Sustainable Careers in Organizations

Facts considered by the employee toward a sustainable career	**Core objectives of talent management (by employer)**
Alignment of work with the individual's strengths, interests, and values	Maximum yield on human capital value
Ongoing learning and renewal	Continuous updating of organizational competencies
Security via employability	Stability via adaptability
Work-life fit over the life course	Organizational commitment and retention.

These are very important factors to consider when managing a team of professionals and related talent retention. A factor called 'talent management' will be gleaned from this to the master list of factors including the mentioned objectives as reference knowledge.

In the context of the European Union, part-time work is promoted as it gives benefits to the employees to maintain better work-life balance and enter/exit tot job market but foremostly as a solution for high unemployment. Also, employers can have a flexible capacity to cater to their varying customer demands. However, the employees have to face lower compensations, being

ineligible for some social benefits and further career prospects. Recruitment, training, and social security contributions are a few concerns of employers on this matter (EurWORK, 2011).

The findings of the Charlotte & Clare (2018) research show the stages of such transitioning by interviewing 39 part-time professionals from two companies in the UK and Netherlands. This research was specific on moving to part-time employment in the same job. According to the author the transition had four stages. Namely private consideration, preparation, negotiation, and adaptation. In private consideration, three main options were assessed. Leaving the organization, remaining full-time, and postponing part-time were the facts which are important to anyone who decides to move to part-time employment.

6.3. Selecting the Right Project Management Methodology

The necessity to realize the uniqueness of each project and selecting the right PM methodology is emphasized in the book 'Project management methodologies: selecting, implementing and supporting methodologies and processes for projects' (Charvat, 2003).

The initiation of adaptation of PM methodologies started in the 1950s in US defence and aerospace sector. The agencies used tools and techniques such as PERT/Gantt charts, critical path, scheduling techniques, organizational issues, and conflict management as early predictors for project management (Charvat, 2003). As projects evolved with time it was realized that the PM methodology suitable for each project depends on the life cycle, market sector, product, size, technology, and situation. The responsibilities of the project methodology can be divided into three main parts. Those are management of project performance, management of project life cycle, and management of resources & communications aspects. Furthermore, it is needful to identify the critical success factors (CSFs) which determine the culture, behaviour, and actions for setting up the environment for successful project delivery (Charvat, 2003). This counts as both a factor to be considered in this research and a pointer indicating the need for this study. Charvat

discusses some phases to follow, to decide on the best project management methodology (Table 4). These phases will touch beyond the boundaries of this study reaching the" pre-sales" stage of the business, but it would be added here due to its relevance in deciding the project methodology.

Table 4 Adaptation of information from Charvat (2003) book to find the phases to follow in selecting the right PM methodology.

Phase	Description	Relativeness to this study
Discovery of the concept	In this phase, the idea of the expected outcome is defined and a strategy for that is derived. The objective here will be to develop a protocol with defined target markets, product concepts, and attributes.	A lead in a business becomes a client. This stage is away from the context of the study.
Engagement with the concept	Client requirements and demands identified. The project manager and the sales department engage with the client to understand the communication needs of the parties involved and start creating processes. This may demand a single meeting or several meetings between stakeholders and starts assigning responsibilities.	The expected requirements of the methodology are being discovered in this phase
Analysis/Feasibility	The project is analysed to decide whether it is feasible to be continued.	Decide the" go, no go" status of the project.
Strategy planning Feasibility assessment	Decide on how the strategy in the organization should be to implement the project. Concerns about the resource availability, and the business value of the project towards the implementing company.	Aligns with the business's current situation. How much commitment, time, and resourcing should be allocated to a certain project? The decisions taken here would define the methodology used for the management of the project team.
System Analysis Design/Development Deployment/Execution	Several stages of product development	These are the stages of SDLC. It is necessary to pre-analyse them to decide on the methodology.

Testing Quality Assurance		
Training Education	Establishing training requirements and preparing necessary material	These are important in selecting the methodology. The structure of all these 3 influences selecting the correct project methodology
Rollout	Decide how the deliverables should be implemented in the client environment	
Maintenance and support	The support on bug fixing, enhancements, and change requests handling	

The methodologies can be classified according to several criteria (Charvat, 2003). Some of the main PM approaches/classifications and methodologies used in software development are listed below in Table 5. As the purpose of this study has a necessity to guide any entrepreneur to follow part-time virtual teams in IT solutions providing, the below would be a good reference indicating the choices available for selecting the PM methodology. However, the below listed is just and mention of the diverse options, therefore they need to be further studied on how they could be used for implementation in one's business.

Table 5 PM approaches/classifications and methodologies used in software development

Project management approach/ methodology	Definitions/ explanations	Comparison notes on similar concepts through other sources
Light methodologies	These methods are more code-oriented, less document-oriented and consider the source code to be the master project documentation. Being able to adapt to change, being more people-oriented rather than process-oriented, use of dynamic checklists are some advantages of lightweight methodology.	Classification category of PM methodologies

Heavy methodologies	Plans a larger portion of the project over a long period. Inherently built to resist change. Much of the project documents like specifications, plans, reports, checkpoints, and schedules are prepared at the start of the project.	Classification category of PM methodologies
Iterative	Re-do the same set of activities in several iterations. The first iteration can be completely changed in the later iterations. The same part of the deliverable keeps evolving and expanding over iterations.	An approach to completing tasks
Incremental	Newer parts keep adding to the previous deliverable. The same deliverable is not re-done in later iterations.	An approach to completing tasks
Agile	An approach combining the Iterative and Incremental approaches (Paula, 2018) . The main focuses of the agile manifesto 1. Individuals and interactions over processes and tools. 2. Working software over comprehensive documentation. 3. Customer collaboration over contract negotiation. 4. Responding to change by following a plan (Agile manifesto, 2001)	An approach to completing tasks
Extreme Programming(XP)	A lightweight agile methodology focused on four core values 1. Communication 2. Feedback 3. Simplicity 4. Courage. XP only addresses software development concerns. It does not address the project finances/portfolio management/ operations marketing for sales. It has small releases, simple design, testing, and continuous integration. Since it's an agile method it is susceptible to change (Beck & Andres, 2004).	Methodology
Scrum	Scrum is a lightweight agile framework having a Product Owner, a Scrum Master, and Developers in the Scrum	Methodology

	Team. Each person has their own responsibilities. The Scrum framework has 5 main events and 3 main artifacts. Transparency, inspection, and adaptation are considered the 3 main pillars of Scrum (What is Scrum, 2007).	
Crystal	Crystal is a lightweight agile methodology. There are 7 main features of Crystal PM methodology. 1. Frequent delivery to the user 2. Reflective improvement 3. Osmotic communication 4. Open expression of team member opinions and issues (personal safety), 5. Focus 6. Expert customers are readily available 7. A technical environment with automated tests, configuration management, and frequent integration (Cockburn, 2004)	Methodology
Rapid Application Development (RAD)	A dynamic approach is used mostly for untested technology and high-risk projects. A more short cyclic and incremental approach is used. The requirements from the client are analyzed in the beginning and the functioning features are delivered in each release. Change in technologies and quick decision making is prevalent in RAD and the development team is aware of and aligned with these rapid changes.	Methodology
Dynamic Systems Development Methodology (DSDM)	A variation of the RAD methodology has fixed time and resources for each cycle. Here unlike other methodologies, the functionality expected at delivery is dynamic.	Methodology
Lean Development	An approach derived from the Toyota lean manufacturing concept. The approach has 7 main points 1. Eliminate waste 2. Build in quality 3. Amplify learning 4. Delay commitments as late as possible 5. Deliver fast	An approach to completing tasks

	6. Respect people 7. Optimize the whole (Poppendieck & Poppendieck, 2003)	
Feature Driven Development	Have many similarities to Scrum method. A key difference is the development process being structured than the Scrum method. The development method is divided into small cross-functioning groups specialized in a certain feature.	Methodology
Kanban	Work management system used as a methodology, designed to visualize the progress of each work item in the project. Usually, the work items are pasted as kanban cards on a kanban board. (Dan Radigan, 2001)	Methodology

There are more PM methodologies that are combinations of the above such as Srumban and Scrumfall. Some of these are being criticized over the fact that they are not following the overarching principle of agile on which the original concept was built. These concepts can be identified as theme principles processes and standards as depicted in Figure 5.

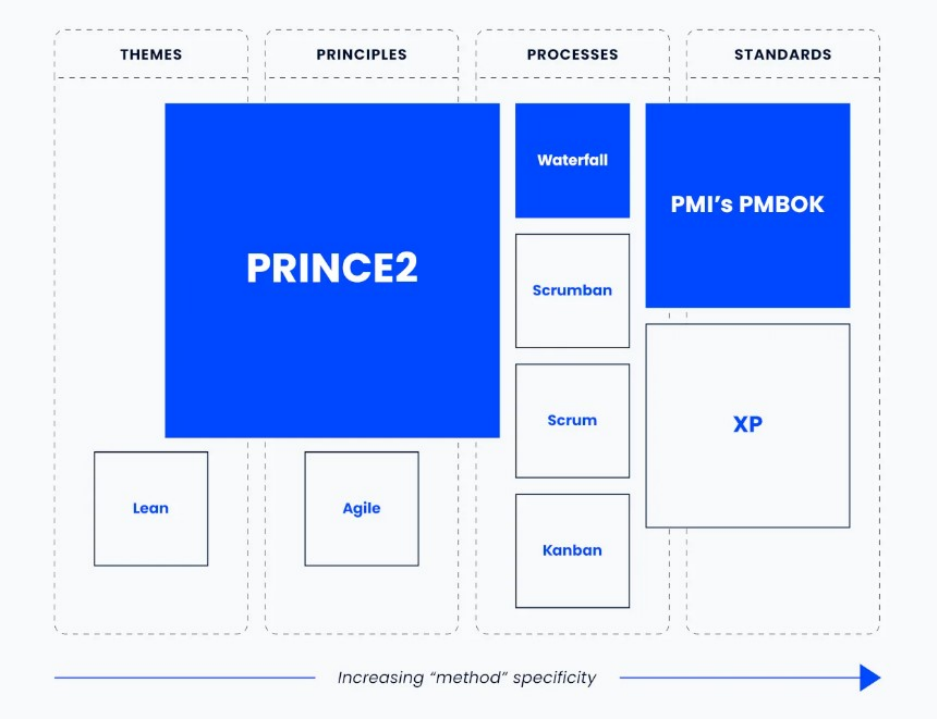

Figure 5 Extracted from The Digital Project Manager website (Aston, 2023)

The key takeaway here is to identify the client's requirements and the capacity of the team to select the most suitable PM methodology for the project.

6.4. Differences between Recruiting Fresh Graduates vs Experienced Professionals

The tendencies of hiring fresh graduates and experienced professionals are discussed in this section. The matter in consideration will be discussed from 2 perspectives. The first is the behavioural pros and cons of each group. Table 6 is created to demarcate the facts.

Table 6 Contrast between Fresh graduates and Experienced Professional created from the information in 'Comparing Candidates: Should You Hire Experienced Workers or Recent College Graduates? ' (Schooley, 2023)

	Pros	**Cons**
Fresh graduates	Motivation for growth	Lack of experience
	Up-to-date skills	Higher turnover
	Availability	Investment in training
	Flexibility	
	Trainable	
Experience professionals	Tacit knowledge about the job	Resistance to change
	Tacit knowledge about the industry	Obsolete methods
	Independent workers	
	Promotable – Adapting to the newer positions	
	Mentors to new workers	

The second perspective on the two groups would be the tendencies in terms of hiring. There was very little research done on the difference between experienced professionals (considered definition explained in section 11.2.3.) and college graduates. The research done by Rynes, Orlitzky, & Bretz (1997) reveals greater visibility on the subject in terms of the hiring tendency of the two groups. Research factors about this matter were suggested as hypotheses through prior

evidence and were tested through its methodology. Certain valuable facts which could be gleaned through the research of this study are depicted in Table 7.

Table 7 Contrast between the hiring fresher's vs experienced created through information from the 'experienced hiring versus college recruiting: Practices and emerging trends' (Rynes, Orlitzky, & Bretz, 1997) research

Factors associated with experienced hiring	**Factors associated with fresh graduate hiring**
Higher salary – expecting higher productivity	Lower salary – Financial strength of the company to recruit, train and groom a new worker into an experienced professional
High productivity expectation	Comparatively low productivity expectation
	Long-term investment
A higher ratio of experienced employees in the current employee composition in the company would attract like-minded experienced candidates	
	Older the company, stronger the internal labour market with norms against hiring experienced workers (Internal resistance to experienced hiring welcomes fresh graduate hiring)
	High dynamism in the pertaining industry, higher the chance of recruiting fresh workers
Inability to predict the actual productivity gap until the candidate is hired	
Change in organizational employment levels (Ex – expansion or downsizing)	
Effectiveness of the recruitment source (especially when the recruitment is outsourced)	
The requirement to maintain the rapport of a" good place to work"	

This section would add 2 factors 'hiring fresh graduates 'and 'hiring experienced professionals' to the master factors list.

6.5. Summary of Literature Review

Since there was no exact match in this context to be found the factors for each major characteristic (Virtual teams, Part-time employment, Hiring experienced employees) were analysed. The master list containing all the factors found along with the literature sources is appended as Annexure A. Annexure A contain the selection made in Stage 2 and the agreement level of the participants from Stage 3 as well.

7. Research Findings

The research findings could be categorized into 3 sections for ease of comprehension.

7.1. Stagewise Findings

Stage 1 activity 1 was the literature analysis which was elaborated in the Literature Review section. Stage 1 Activity 2 revealed much information on the factors about the tested context through the semi-structured interview with the Hypercent CEO. Some of the answers validated the data found through the sources mentioned in the thesis.

> Question: There are a lot of large-scale IT companies, and there are numerous start-ups as well. What do you think about the demand for IT products & services? Is there a saturated supply for the demand?
>
> Answer: It's not saturated there’s high growing demand for IT Products and services

Thus, it shows that the industry is well-demanding software solutions. The survey statistics mentioned in DesignRush (2022) and SkyQuest (2022) can be proven right from this statement.

> Question: What kind of professional experience does the team have?
>
> Answer: All are professionals having more than 5 years of experience

Question: Where are the employees located?

Answer: Remotely across the globe

Question: What is the full-time/ part-time composition of the team at the moment?

Answer: 1- Full-time, Rest part-time

The employee composition shows how the team is dispersed. Also, the necessity of at least one person working full-time to collaborate the virtual team.

Question: What would be the most important factors you would suggest when it comes to part-time virtual team management?

Answer: Having self-driven experienced Team members.

Having online collaboration tools.

Good online communication skills.

These were added to the master list of factors.

Stage 2 of the thesis was the workshop with the CEO to shortlist the master list of factors to find the suited factors specific to the context. A few factors appeared similar which were bundled as one for each subject and eight factors were removed accordingly. A total of 40 unique factors were identified after stage 2 and were proceeded to the next stage.

Table 8 8-Factors removed due to appearing similar.

Factors discovered (May be altered to match the way of questioning)	Similarities Found	Selected to proceed
Clear assignment of roles and responsibilities	Clear assignment of roles and responsibilities	Yes
Thorough briefing about the expectation (goal setting)	Clear assignment of roles and responsibilities	No
Hiring experienced professionals	Experienced Professionals	No
Having self-driven experienced Team members.	Experienced Professionals	Yes
Development processes/methodologies	PM methodology	No
Selection of Project methodology	PM methodology	Yes
Good quality management	Product Quality Management	Yes
Quality in development	Product Quality Management	No

Remuneration	Remuneration	No
Part-time employee retention - Remuneration - Economic quality of alternative employment	Remuneration	Yes
Employee retention fact - Payment	Remuneration	No
Supporting tools and good infrastructure	Supporting tools and good infrastructure	No
the level of technical infrastructure	Supporting tools and good infrastructure	No
Having online collaboration tools	Supporting tools and good infrastructure	Yes

Stage 3 included many comments along with the answers provided (comments are included in the next section). Most factors (except for 2) were agreed upon on some level or kept undecided by the rest of the interviewees, which indicates that the preliminary screening by the CEO was aligning with the opinion of the team on the subject.

7.2. Factor-wise Analysis

The factors were analysed based on the level of agreement of the interviewees in stage 3. Accordingly, four themes were identified.

1. Unanimously strongly agreed factors
2. Factors all agreed on some level – either strongly or slightly
3. Factors which have at least 1 undecided preference
4. Factors which have at least 1 disagreement

7.2.1. Unanimously Strongly Agreed Factors

The 1st category can be identified as the main outcome of the research. The 13 (out of 40 proceeded from stage 2, and 103 in total) factors were unanimously selected as the most important by the team leaders in the technical outcome of the effort. However, the comments added much more value to the collated finding.

Table 9 Unanimously strongly agreed upon factors.

Index	Factors discovered (May be altered to match the way of questioning)	Stage 3 - Project Manager 1 Comments	Stage 3 - Development team Lead Comments	Stage 3 - Lead Business Analyst Comments	Stage 3 - UI/UX team Lead Comments	Stage 3 - Project Manager 2 Comments
1	Top-level management support					
6	Leadership characteristics					
10	Internal project communication					
13	Clear assignment of roles and responsibilities	The team should be able to carry out their tasks unsupervised after the assignment				
28	Requirements and specifications	Requirements should be finite and quantifiable		Having clear Requirements is important as frequent meetings may not be possible as compared to full-time work in a physical office	When requirements are not clear enough in the beginning the team becomes demotivated over rework. Specially because of the ambiguity on the work they are carrying on.	
31	Realistic schedule					
32	Adequate resources					
36	Up-to-date progress reporting	Extremely important as				

		the team is dispersed.				
37	Having self-driven experienced Team members.					Grooming people new to industry should be done in a physical office space. They should witness how people react to things. And other attributes like punctuality, meeting management, collaborating with the co-workers and more in-person characteristics. These are hard to grow in a person through online meetings
83	Selection of Project methodology	Unsuitable methodologies would seriously hinder the project progress				Sometimes the methodology might have to be altered a bit to fit the situation. For an example the Daily Stand-up for Scrum might have to be kept every other day according to the availability of the part-timers. But you need to stick to the alternative and work on it. The methodology shouldn't wobble.
92	Part-time employee retention - Remuneration - Economic quality of alternative employment	A key attraction for the job	Resourcing and commitment majorly depend on this as most are part timers	Key Factor in this context as most of the hired professionals are already earning good. Would need and extra monetary motivation to keep them in the teams		Specially with Part-timers
102	Having online collaboration tools.		Task management and data repository tools like JIRA and Azure are necessary for team management as we don't see each other			without proper infrastructure or tools, online project management would be impossible

			often like in an office environment. And all members in the team should be vigilant on the activities on these tools as well.			
103	Good online communication skills					

Out of the 13 high relevance factors the 'Requirements and specifications' had much attention from the interviewees." Having clear Requirements is important as frequent meetings may not be possible as compared to full-time work in a physical office" and" when requirements are not clear enough, in the beginning, the team becomes demotivated over rework. Specially because of the ambiguity on the work they are carrying on". Agile methodology is structured to handle changes in requirements. However, having constant rework would cause impact over cost, schedule and also the team's motivations to make quality and faster deliveries. The emphasis on the matter was made in the 'A contingency fit model for critical success factors for software development project' where some of the above factors were extracted to the master list." Customers who are familiar with software product development can provide clearer requirements. Additionally, customers with high business acumen tend to correctly identify their business needs saving time cost and quality" (Daellenbach, Cavana, & Ahimbisibwe, 2015).

Remuneration was considered another major fact to retain good talent." Key Factor in this context is most of the hired professionals are already earning well from their full-time job. It would cost an extra monetary motivation to keep them in the teams" and most other comments show a driving factor to attract professionals to this project environment." The proportion of income workers earn from their PT job should affect their financial dependence on the employer" (Martin & Sinclair, 2007) .

The three factors added from the stage 1 interview with CEO were selected by all 5 interviewees. A comment by a project manager has similarities to a comment made by the CEO in the stage 1 interview.

> Stage 1 Interview:
>
> Question: How do you see the difference between the performance of the starting professionals and experienced professionals working part-time on your projects? What difference have you seen in them adapting to the virtual environment?
>
> Answer: I prefer hiring experienced personnel. Experienced professionals are independent workers. They can take up instructions and follow through end to end with minimal management. The reason for not having Starting Professionals in a virtual setting is that it is difficult to assess their ongoing productivity, career progression, teamwork. And also, there is less ability to effectively train the employee.
>
> Stage 3 comment: Grooming people new to the industry should be done in a physical office space. They should witness how people react to things. And other attributes like punctuality, meeting management, collaborating with the co-workers and more in-person characteristics. These are hard to grow in a person through online meetings

This has a close resemblance to the information in Table 6. However, the comment by the project manager describes the matter in specific to the contrast of online and physical setup of an office.

7.2.2. Factors all Agreed on Some Level – Either Strongly or Slightly

This theme is the set of factors selected by the interviewees having at least one "Agreed". This list does not have any undecided or disagreed factors.

Table 10 Factors all agreed on some level – either strongly or slightly

Index	Factors discovered (May be altered to match the way of questioning)	Stage 3 - Project Manager 1 Comments	Stage 3 - Development team Lead Comments	Stage 3 - Lead Business Analyst Comments	Stage 3 - UI/UX team Lead Comments	Stage 3 - Project Manager 2 Comments
3	Project team commitment					
5	Level of project planning					
19	Project team's expertise with the task					
29	Good performance by vendors/contractor	If such vendors are partnered, managing vendors is a major concern		Yes if some work is delegated to another vendor.		
33	Risk management					
34	Realistic budget					
46	Task Immersion					Since the employees are working in other companies as well, we wont be able to have a full commitment anyways
51	Sharing solutions	Since this is an online setting it is important to collect all ideas of the team to deliver the best solution possible		The professionals working in this business have good experience. It is important to get their ideas to create a good product		
52	Aggregation of the ideas/solutions					

53	Part-time employee category - Primaries	The better performance depend on the person, rather than the category				This is new
54	Part-time employee category - Younger Married Supplementers	The better performance depend on the person, rather than the category				This is new
57	awareness of colleagues tasks and their context	Sync up meetings are essential	Most important to a tech lead/ architect		Being on the same page could avoid rework	It wont be possible to have a wide range of awareness of the project as they are supposed to in an fulltime project
60	the level of technical competence of the team members					
61	Part-time employee category - Single Supplementers	The better performance depend on the person, rather than the category				This is new
68	Empowering			Since we have a thin management layer, its important to have the responsibilities shared. And its doable as the members are experienced professionals		
75	National heterogeneity of team members	Easier to find common ground				
100	Temporal Stability		Easier to manage the development team when they are familiar with each other. Even if we are working on a new technology			

It could be noticed that sharing solutions is emphasized by the interviewees. This could be analysed in two aspects. The sharing information about the ongoing solution with all the team is desired and would rapid the pace when all members of the team have common awareness. The other aspect is the solution creation phase where all ideas should be brainstormed before the solution is presented to the client, maybe earlier such as in the presales phase of the project. Brainstorming of ideas could be related to the crowdsourcing concept since both workers have the non-permanent characteristic in their employment. In the book ”Wisdom of the crowds” (Surowiecki, 2004), 4 conditions were indicated that will likely relate to this study. First is the diversity of the problem-solvers skills and perspectives to the company’s internal employees. Second is independence in solution idea generation, avoiding groupthink. The third condition would be decentralization which allows the crowd to know each other's opinions so that all can contribute to an evolving solution. Last would-be group of the company’s internal staff aggregating and selecting the final decision. The last part is by default done by the team itself in the studied context.

A special comment on the part-time categories was made. Both project managers mentioned that the whole topology of the part-timers mentioned (Sinclair, Martin, & Robert, 1999) was new knowledge for them. One of them indicated that the attribute of the individual depends on personal characteristics despite the category. Therefore, even though agreed with the selection through stage 2, the prior literature could not be re-assessed from this information.

Awareness of each other's work was mentioned in several sources (Dourish & Bellotti, 1992) (Peñarroja, Orengo, Zornoza, & Hernández, 2013) (Armstrong & Cole, 1995) (Olson & Olson, 2006). This was much emphasized by most of the interviewees as well while being specific to this study.” It won’t be possible to have a wide range of awareness of the project as they are supposed to in a fulltime project” and” Sync up meetings are essential” is evident to it.

Temporal Stability was commented as" Easier to manage the development team when they are familiar with each other. Even if we are working on a new technology". However, since the nature of business is to work with part-timers, it was mentioned that resources with less temporal stability would be an obvious challenge that the leaders must face.

7.2.3. Factors Which Have At Least 1 Undecided Preference

Table 11 Factors which have at least 1 undecided preference

Index	Factors discovered (May be altered to match the way of questioning)	Stage 3 - Project Manager 1 Comments	Stage 3 - Development team Lead Comments	Stage 3 - Lead Business Analyst Comments	Stage 3 - UI/UX team Lead Comments	Stage 3 - Project Manager 2 Comments
16	Project team's composition					The challenge is to manage the team despite the composition
20	Project team's general expertise					
25	Project team's experience with SDM (Software Development Methodologies)	The team could be trained for the methodology if the PM is well experienced				
47	Processing of Information					
49	Diverse skills & perspective					Right skills for the right project would be sufficient
76	Frequent/intense communication			Effective communication is rather expected		

87	Good quality management	Maintaining expected functionality for each client demo and the final product will	Maintaining quality is vital. The scheduling should be arranged according to quality	In project management it's always a compromise when it comes to a dilemma. The priority should be set according to the business objective of the client. No point in delivering a product when their launching event is passed or delivering a feedback management system without the feature to answer. Quality and schedule depend accordingly.
89	Team member's perception on time			

The common reason mentioned for marking the factors" undecided" (neutral) was the ambiguity of the situation with which they encountered. These factors were found by one or many that had many dependencies of the background of the project and the situation. The number of strongly agreed markings was low in this category. Most factors were marked as either agreed or undecided (refer to Annex A). Project team's composition, Team's experience with Software Development Methodologies, Diverse skills and perspective and Frequent communication were considered as necessary yet not related to driving factors for the context in consideration. Project teams' general expertise and Processing of information were considered quite common in any project environment.

The factor Team member's perception of time was elaborated in section 11.1.7 Work Culture. This was chosen as undecided by most as the team has regular experience with American clients and Sri Lankan clients only. Therefore, the concept could not be tested from the collective experience of this team.

7.2.4. Factors Which Have At Least 1 Disagreement

Table 12 Factors which have at least 1 disagreement

Index	Factors discovered (May be altered to match the way of questioning)	Stage 3 - Project Manager 1 Comments	Stage 3 - Development team Lead Comments	Stage 3 - Lead Business Analyst Comments	Stage 3 - UI/UX team Lead Comments	Stage 3 - Project Manager 2 Comments
15	Project team empowerment	Doesn't have much time for this in our context		I believe we hire experienced professionals to avoid this factor.		depends on how long the project will be
98	Employee retention fact - Work flexibility	Might leave despite the flexibility		This is a given fact in our project teams. So it would not be a decisive factor.	It's a default fact in Part-time	

There were only one strongly agree, three agree, four undecided and two disagree markings for both these factors collectively. The sources (Martin & Sinclair, 2007) (Daellenbach, Cavana, & Ahimbisibwe, 2015) have endorsed these facts for the specific context in which they research. However, along with the comments it shows the irrelevance of these factors in the considered project environment.

7.3. Job-role wise Analysis

It could be identified that there is a biasness pertaining to their fields, on certain emphasis made by the team leads. In the unanimously selected set, Selection of project methodology was further commented by the two project managers." Sometimes the methodology might have to be altered a bit to fit the situation. For example, the Daily Stand-up for Scrum might have to be kept every other day according to the availability of the part-timers. But you need to stick to the alternative made and work on it. The methodology shouldn't wobble" was commented by a project manager. This makes close resemblance to the dependence of selecting the project methodology, on life cycle, product, size, and situation mentioned in 'Project management

methodologies : selecting, implementing and supporting methodologies and processes for projects' (Charvat, 2003).

The factor" Good performance by vendor/contractor" suits only when a certain portion of the software development or some other hardware implementation is done by a third-party business. Such work needs to be thoroughly monitored on the compatibility of their inputs and outputs towards the software developed in-house. Project manager and Business analyst demands frequent interaction and updates from the vendor to manage the overall project. Thus, both role holders have emphasized on the criticality of it.

Good quality management was considered as an absolute necessity by the UI/UX lead, development lead and project managers. The reasonings were relevant to their fields;" Maintaining expected functionality for each client demo and the final product will" and" The priority should be set according to the business objective of the client. Quality and schedule depend accordingly". The factor was perceived in multiple ways. As a part of scope delivery, as a fact for business continuation and as a point of compromise as necessary.

In general, it could be noticed that project managers and business analysts are more aligned to factors of scope, time, and cost. UI/UX lead has a tendency of promoting quality and development lead is aligned to scope time and team personal characteristics related factors.

8. Conclusion

The 13 factors unanimously strongly agreed upon by the interviewees show the most important aspects of team management to consider when managing teams in this context. The factors do not give specific instructions on managing the team. The most suitable way of managing depends on the project and the team. For example "Up to date Progress reporting" is vital, and the method for it should be decided by the project manager and the business owner.

The second theme of ”Factors all Agreed on Some Level” contains the most important factors according to a certain job role and the individual interpretation of the factor. Comments like ” It wont be possible to have a wide range of awareness of the project as they are supposed to in an fulltime project”and ” better performance depend on the person, rather than the category” show the personal perception emphasized. The second theme, third theme and the job role-wise analysis show how the factors are important to the different disciplines of the industry (ex - Project management, business analysis, UX design).

The total result set along with the comments should be analyzed by any entrepreneur to gain the full visibility of the business. The disagreed factors make a strong argument on how the business functions. Inherent characteristics of the business like the rapid pace of the business, frequent turnover, minimum management hierarchy, and faster project initiation and planning need to be well examined and the comments in stage 3 will be good support for it.

The participants of the research were able to gain some insight into some new knowledge as well. Temporal stability, lightly coupled work/ tightly coupled work, part-time employee topology, and perceived distance are a few to mention. Some aspects of these concepts were already being practiced or experienced by the managers even without the awareness of the knowledge area. Providing a knowledge structure for this business model was one of the necessities of the field and it was fulfilled to a certain extent through the course of this study.

9. Practical implications

An inherent quality in part-time workers is the rapid turnover. It is recommended to partner up with a recruitment agency that has a talent pool where talent can be hired. It was emphasized that the team management layer should be at a minimum for a successful continuation of this business. The reason being the decisions making time of the team should be fast and any changes to the solution requested by the client should be immediately communicated to the team. The factor, of top-level management support, portrays this quality in the business model. The main reason for this emphasis is that unlike in a full-time office, the team will not have a long time for

collaboration or re-work. It is recommended to have the business owner as a consultant working closely with the team.

Team management in this context can have several practical implications which would be beneficial for an entrepreneur. Some client requirements tend to be vague and the team led by the business analyst needs to guide the client on to the right solution where the end product would be beneficial to the client's business. The business need of the client should be well recognized in an earlier stage of the project. Thereafter technical needs should be assessed. Proceeding vice versa would lead to much rework and tensions between the client and the team.

As mentioned in section 6.4. experienced professionals have the benefit of choosing their work time and projects. This could be a remedy for some of the professionals working under stress and having full-time commitments for work.

When the team is managed properly the clients are delighted to see much value for money in the products they receive. This is mainly because of the higher level of experience in the team, which would be highly expensive if consulted with a usual IT business.

10.Discussion

The stagewise filtration of the factors turned out to be an enabler to receive more information about the management perspective of the Hypercent managers/leads. In the case of the technical analysis of the results it can be noticed that the importance of the factors gradually diminishes from 'Unanimously strongly agreed' to 'Factors which have at least 1 disagreement'. Considering the comments along with it a few factual conclusions can be drawn. It is important to notice that the Likert scale was used as a method of selection of the factors only. The number of factors in each theme obtained through the Likert Scale is irrelevant. There was no necessity to make any mathematical calculation for the results of the Likert Scale. Therefore, it can be identified that the stage 3 is qualitatively analysed, despite using the Likert Scale which is a quantitative technique.

The project team members in the studied context are primarily professionals in the field and are grouped together temporarily to work for achieving a goal. Therefore, the psychological need for job security does not exist. They tend to seek for likewise professionals to join the teams, who have the technical expertise and the maturity to understand the working nature of this business. Therefore, the training and development of other members of the project team are not considered in this setup. Therefore, these teams might not be the ideal place for professionals who are starting their careers to train and develop their skills in working with teams. Experienced professionals have an idea of how the project teams function, the norms and trends of virtual project teams, the role of the project lead or the facilitator, and the attributes in delivering the expected delivery to the client. These understandings come with practice over time.

The goal of the considered business effort should be clearly identified.

> Stage 1 Question: How would you define a successful project delivery?
>
> Answer: Delivered on time, within budget and with high quality. But success is all about client satisfaction. If the client is happy having some attributes compromised and some highlighted, we are to deliver exactly what is expected.

Since the business is a lightweight model, it has less investment in Human resource management. The use of technology was emphasized, in terms of communication and software development. The business model of the company should be evaluated by having the right people as a key resource and finding the right people as a key activity. The dynamic expertise which could be used in different projects, low cost and expert opinion on the solution can be added to the value proposition. The minimal management layer in the company would affect the cost structure of the business model.

Related to the nature of employment studied in this research crowdsourcing can be found as a closely bound concept as it tallies with the attributes of part-time, virtual work, IT industry, and smaller scoped tasks. Therefore, it is preferred to investigate this concept to glean facts on building the foundation for this study. Jeff Howe has defined crowdsourcing as “the act of undertaking any external software engineering tasks by an undefined, potentially large group of online workers in an open call format” (Mao, Capra, Harman, & Jia, 2017). Organizations and

individuals have issues that need solutions from experts who have better experience in their fields of practice. Outsourcing is having a selected external party contribute to problem-solving. Crowdsourcing is expressing the problem towards millions of people and having their expertise to solve it. There are internet platforms to link the problems with the problem-solving crowd. The said conditions were further analysed by Bonabeau E (2009), in his article "Decisions 2.0: The Power of Collective Intelligence", which tends to be more into human behavioural traits of working in crowds, which is off the study purpose of this literature. In" Decision Making in a Web 2.0 Environment: Crowdsourcing Lessons for Organizations" (Rosen, 2011) remuneration factor was mentioned as another condition to consider which had been a key finding in this study as well. Using the internet, the problem is broadcasted to the global online global laborers to work on various software engineering tasks. The tasks may include requirements elicitation, design, coding and testing. This method has claimed reduced time-to-market and lower costs and lower defect rates with flexible development capability (Lakhani, Garvin, & Lonstein, 2010). Especially small-scale companies with fewer resources can get help from a large pool of people and labour resources through crowdsourcing at a minimal cost (Rosen, 2011). However, the crowdsourced software engineering concept itself has few innate drawbacks as well. Case study research done by Klaas-Jan Stol and Brian Fitzgerald on crowdsourcing software development at a multinational corporation reveals several challenges encountered in crowdsourcing for software development. One main difficulty is that crowdsourced development process is a waterfall project methodology model and must be integrated in agile approach used in the company (Stol & Fitzgerald, 2014). The development cost has risen more than the expected level as there had been an overhead in terms of company effort to answer crowdsourcing community queries. Also, the time taken for concluding contests that targeted a commercial development outcome and resolving quality issues was longer than the expected duration. Another problem was that focus on the development of the quality constraints is pushed to later stages as it takes time (Stol & Fitzgerald, 2014), which is a problem because identifying bugs has to be initiated as early as possible even though testing of development is done as the last stage. However, an interesting take from Stol and Fitzgeralds' study is that they have concluded that crowdsourcing works better for specific software development tasks that are less complex and stand-alone without interdependencies,

which tallies with the context in this study. Another downside of crowdsourcing is the quality of the work or ideas generated. Since the method allows the masses to respond the answers obtained might not have the expected relevance to the cause and leads to having a lot of irrelevant data (Whitla, 2009), which creates a necessity to hire experts to filter out (Dokoupil, 2008). Also, there is a problem with having many amateurs and relatively less highly experienced professionals in the responding community (Rosen, 2011). As a counterargument, it had been researched that crowds are largely self-selected professionals in their respective fields (Brabham, 2012). Additionally, the work to be outsourced needs to be carefully decided as despite the pros it might have severe damage to the projects on going in the company (Barthélemy & Adsit, 2013). The concept of Freelancing is a subset of crowdsourcing more aligned with work rather than idea generation and the freelancers work individually or in small groups in contrast to the collective outcome of the masses in crowdsourcing. It is evident that both in crowdsourcing and in this study's considered business structure, finding right experts is eminent.

In order to supplement this need of finding right people, partnering up with a recruitment firm is suggested. The updated talent pool information in recruitment companies would be a good resource to make sudden expansions of the team. This could be one of the major key partnerships in the business model.

Another key takeaway is the findings in the literature on transitioning from a full-time job to a part-time job. Section 6.2.3. consists of preliminary details to work as a framework for this transfer. However, further research on the matter is suggested.

As depicted in Figure 1 there are more areas to be considered in this business. Finance, HR & recruitment, Sales & Marketing, Legal, Team Member Attributes and Operational matters need to be further researched. Furthermore, the management of the team is directly connected with how successful project delivery is defined by the company. The stage 1 interview with the CEO revealed some trigger points for it. "Delivered on time, within budget and with high quality. But success is all about client satisfaction. If the client is happy having some attributes compromised and some highlighted, we are to deliver exactly what is expected". From this standpoint, further research is suggested in this regard. Also, further research is suggested on improving

communication under the specific environment of this research. The teams revealed that they are using WhatsApp groups for day-to-day operational communication and Google Meet for necessary meetings. The best way to have the attention of partially committed employees dispersed globally in different time zones is yet to be researched.

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Annexures

Annex A

Master List of Factors

Legend to refer to the Master List	
SA	Strongly Agree
AG	Agree
UN	Undecided
DG	Disagree
SD	Strongly Disagree
~~Strikethrough~~	Facts removed due to being identified as similar to another fact after stage 2

Index	Source(s)	Factors discovered (May be altered to match the way of questioning)	CEO Screening	Project Manager 1	Development team Lead	Senior Business Analyst	UI/UX team Lead	Project Manager 2	The Factor selection category
1	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Top-level management support	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree
2	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	User/client participation	No						
3	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Project team commitment	Yes	AG	SA	SA	SA	SA	All agree - Some strongly and some slightly
4	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Organizational culture	No						
5	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Level of project planning	Yes	AG	SA	SA	SA	SA	All agree - Some strongly and some slightly

6	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Leadership characteristics	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree
7	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Vision and mission	No						
8	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Monitoring and controlling	No						
9	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Change management skills	No						
10	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Internal project communication	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree
11	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	User support	No						
12	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Technological uncertainty	No						
13	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Clear assignment of roles and responsibilities	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree
14	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Technical complexity	No						
15	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Project team empowerment	Yes	UN	AG	DA	SA	UN	At least 1 disagreement
16	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Project team's composition	Yes	AG	SA	AG	UN	AG	Some Agree & Some undecided
17	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Customer training and education	No						
18	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Customer (client) experience	No						
19	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Project team's expertise with the task	Yes	AG	SA	SA	SA	SA	All agree - Some strongly and some slightly
20	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Project team's general expertise	Yes	UN	AG	UN	AG	UN	Some Agree & Some undecided
21	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Lack of dev teams' skill	No						
22	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Urgency/duration	No						
23	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Relative project size	No						
24	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Specification/requirement changes	No						
25	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Project team's experience with SDM (Software Development Methodologies)	Yes	AG	UN	SA	UN	AG	Some Agree & Some undecided

26	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Project criticality	No						
27	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Lack of end user experience	No						
28	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Requirements and specifications	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree
29	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Good performance by vendors/contractor	Yes	SA	AG	SA	AG	SA	All agree - Some strongly and some slightly
~~30~~	~~(Olson & Olson, 2000)~~	~~Thorough briefing about the expectation (goal setting)~~	~~Yes~~	~~SA~~	~~SA~~	~~SA~~	~~SA~~	~~SA~~	~~Unanimously strongly agree~~
31	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Realistic schedule	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree
32	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Adequate resources	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree
33	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Risk management	Yes	SA	AG	SA	SA	SA	All agree - Some strongly and some slightly
34	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Realistic budget	Yes	SA	AG	SA	SA	SA	All agree - Some strongly and some slightly
~~35~~	~~(Rynes, Orlitzky, & Bretz, 1997)(Schooley, 2023)~~	~~Hiring experienced professionals~~	~~Yes~~	~~SA~~	~~SA~~	~~SA~~	~~SA~~	~~SA~~	~~Unanimously strongly agree~~
36	(Daellenbach, Cavana, & Ahimbisibwe, 2015)	Up-to-date progress reporting	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree
37	From the Semi-Structured Interview, (Rynes, Orlitzky, & Bretz, 1997)(Schooley, 2023)	Having self-driven experienced Team members.	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree
38	(Wilson & Eaton, 2008)	Do high levels of interaction between online project team members within online spaces indicate high performance?	No						
39	(Wilson & Eaton, 2008)	Does culture have an importance in an online project team's high performance?	No						
40	(Wilson & Eaton, 2008)	Does funding for an online project team impact a team's high performance?	No						
41	(Wilson & Eaton, 2008)	Does executive sponsorship impact an online project team's high performance?	No						

42	(Wilson & Eaton, 2008)	Are online project teams which utilize online project team support personnel, more high performing?	No						
43	(Wilson & Eaton, 2008)	Does organizational change within corporations impact high performance within online project teams?	No						
44	(Wilson & Eaton, 2008)	Do online project teams which utilize face-to-face kickoff meetings more high performing?	No						
45	(Bakker, Boros, Kenis, & Oerlemans, 2013)	Time Orientation	No						
46	(Bakker, Boros, Kenis, & Oerlemans, 2013)	Task Immersion	Yes	SA	SA	SA	SA	AG	All agree - Some strongly and some slightly
47	(Bakker, Boros, Kenis, & Oerlemans, 2013)	Processing of Information	Yes	UN	SA	AG	AG	AG	Some Agree & Some undecided
48	(Bakker, Boros, Kenis, & Oerlemans, 2013)	Team Conflicts	No						
49	(Surowiecki, 2004)(Glikson, Woolley, Gupta, & Kim, 2019)	Diverse skills & perspective	Yes	AG	SA	SA	UN	UN	Some Agree & Some undecided
50	(Surowiecki, 2004)	Independent thinking	No						
51	(Surowiecki, 2004)	Sharing solutions	Yes	AG	SA	SA	SA	SA	All agree - Some strongly and some slightly
52	(Surowiecki, 2004)	Aggregation of the ideas/solutions	Yes	AG	AG	AG	AG	SA	All agree - Some strongly and some slightly
53	(Sinclair, Martin, & Robert, 1999)	Part-time employee category - Primaries	Yes	AG	AG	SA	SA	AG	All agree - Some strongly and some slightly
54	(Sinclair, Martin, & Robert, 1999)	Part-time employee category - Younger Married Supplementers	Yes	AG	SA	SA	SA	AG	All agree - Some strongly and some slightly
55	(Olson & Olson, 2006)	Alignment of incentives and goals	No						
56	(Olson & Olson, 2006)	trust among team members	No						
57	(Dourish & Bellotti, 1992)(Peñarroja, Orengo, Zornoza, & Hernández, 2013)(Armstrong & Cole, 1995)(Olson & Olson, 2006)	awareness of colleagues tasks and their context	Yes	SA	SA	SA	SA	AG	All agree - Some strongly and some slightly

58	(Casey & Richardson, 2004)(Olson & Olson, 2006)	no motivational sense of presence because of others	No						
59	(Olson & Olson, 2006)	the need for explicit management	No						
60	(Olson & Olson, 2006)	the level of technical competence of the team members	Yes	AG	SA	SA	SA	SA	All agree - Some strongly and some slightly
61	(Olson & Olson, 2006)(Sinclair, Martin, & Robert, 1999)	Part-time employee category - Single Supplementers	Yes	AG	AG	SA	SA	AG	All agree - Some strongly and some slightly
62	(Olson & Olson, 2006)	nature of work	No						
63	(Olson & Olson, 2006)	common ground of the team members	No						
64	(Olson & Olson, 2006)	competitive/cooperative culture	No						
65	(Morrison-Smith & Ruiz, 2020)(Bodemer & Dehler, 2011)(Olson & Olson, 2006)(Glikson, Woolley, Gupta, & Kim, 2019)	Effort visualization	No						
66	(Mortensen & Hinds, 2001)(Herbsleb, Mockus, Finholt, & Grinter, 2000)(Cramton, 2001)(Olson & Olson, 2006)(Hinds & Mortensen, 2005)	Intra-team conflict resolution	No						
67	(Olson & Olson, 2006)(Morrison-Smith & Ruiz, 2020)	Transformational Leadership	No						
68	(Olson & Olson, 2006)(Morrison-Smith & Ruiz, 2020)	Empowering Leadership	Yes	SA	AG	SA	SA	SA	All agree - Some strongly and some slightly
69	(Olson & Olson, 2006)(Morrison-Smith & Ruiz, 2020)	Emergent Leadership	No						
70	(Olson & Olson, 2006)(Morrison-Smith & Ruiz, 2020)	Shared Leadership	No						
71	(Olson & Olson, 2006)(Sinclair, Martin, & Robert, 1999)	Part-time employee categorization	No						

72	(Olson & Olson, 2006)(Martin & Sinclair, 2007)	Part-time employee retention - job satisfaction	No						
73	(Olson & Olson, 2006)(Martin & Sinclair, 2007)	Part-time employee retention - organizational commitment	No						
~~74~~	~~(Olson & Olson, 2006)~~	~~Development processes/methodologies~~	~~Yes~~	~~SA~~	~~SA~~	~~SA~~	~~SA~~	~~SA~~	~~Unanimously strongly agree~~
75	(Olson & Olson, 2006)(Wilson, O'Leary, Metiu, & Jett, 2008)	National heterogeneity of team members	Yes	AG	SA	AG	SA	SA	All agree - Some strongly and some slightly
76	(Olson & Olson, 2006)(Wilson, O'Leary, Metiu, & Jett, 2008)	Frequent/intense communication	Yes	SA	UN	UN	SA	SA	Some Agree & Some undecided
77	(Marlow, Lacerenza, & Salas, 2017)(Olson & Olson, 2006)(Olson & Olson, 2009)	Tightly coupled work - High dependency on each other	No						
78	(Marlow, Lacerenza, & Salas, 2017)(Olson & Olson, 2006)(Olson & Olson, 2009)	Loosely coupled work - Low dependency on each other	No						
79	(Olson & Olson, 2006)(Bell & Kozlowski, 2002)	Structural support	No						
80	(Olson & Olson, 2006)(Ensley, Hmieleski, & Pearce, 2006)	Hierarchical Leadership	No						
81	(Olson & Olson, 2006)(Day, Gronn, & Salas, 2004)	Shared Leadership	No						
82	(Olson & Olson, 2006)(Krauss & Fussell, 1990)	Mutual Knowledge	No						
83	(Olson & Olson, 2006)(Charvat, 2003)	Selection of Project methodology	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree
84	(Olson & Olson, 2006)(Monique Valcour, 2015)	Talent management	No						
85	(Olson & Olson, 2006)(Monique Valcour, 2015)	Career Development of the team	No						
86	(Olson & Olson, 2006)(Schooley, 2023)	hiring fresh Graduates	No						
87	(Olson & Olson, 2006)	Good quality management	Yes	SA	SA	UN	SA	AG	Some Agree & Some undecided
~~88~~	~~(Olson & Olson, 2006)~~	~~Quality in development~~	~~Yes~~	~~SA~~	~~SA~~	~~UN~~	~~SA~~	~~AG~~	~~Some Agree & Some undecided~~
89	(Olson & Olson, 2006)(Saunders, Slyke, & Vogel, 2004)	Team members perception on time	Yes	AG	UN	UN	UN	SA	Some Agree & Some undecided
~~90~~	~~(Olson & Olson, 2006)~~	~~Remuneration~~	~~Yes~~	~~SA~~	~~SA~~	~~SA~~	~~SA~~	~~SA~~	~~Unanimously strongly agree~~

91	(Olson & Olson, 2006)(Sinclair, Martin, & Robert, 1999)	Part-time employee category - Older Married Supplementers	No						
92	(Olson & Olson, 2006)(Martin & Sinclair, 2007)	Part-time employee retention - Remuneration - Economic quality of alternative employment	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree
93	(Olson & Olson, 2006)(Martin & Sinclair, 2007)	Employee retention fact - Payment	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree
94	(Olson & Olson, 2006)(Sinclair, Martin, & Robert, 1999)	Part-time employee category - High school students	No						
95	(Olson & Olson, 2006)(Sinclair, Martin, & Robert, 1999)	Part-time employee category - College students	No						
96	(Olson & Olson, 2006)(Sinclair, Martin, & Robert, 1999)	Part-time employee category - Part-time moonlighters	No						
97	(Olson & Olson, 2006)(Sinclair, Martin, & Robert, 1999)	Part-time employee category - Full-time moonlighters	No						
98	(Olson & Olson, 2006)(Martin & Sinclair, 2007)	Employee retention fact - Work flexibility	Yes	UN	UN	DA	AG	AG	At least 1 disagreement
~~99~~	~~(Olson & Olson, 2006)~~	~~Supporting tools and good infrastructure~~	~~Yes~~	~~SA~~	~~SA~~	~~SA~~	~~SA~~	~~SA~~	~~Unanimously strongly agree~~
100	(Olson & Olson, 2006)(Horila & Siitonen, 2020)	Temporal Stability	Yes	AG	SA	SA	SA	SA	All agree - Some strongly and some slightly
~~101~~	~~(Olson & Olson, 2006)~~	~~the level of technical infrastructure~~	~~Yes~~	~~UN~~	~~SA~~	~~SA~~	~~SA~~	~~SA~~	~~Some Agree & Some undecided~~
102	From the Semi-Structured Interview	Having online collaboration tools.	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree
103	From the Semi-Structured Interview	Good online communication skills.	Yes	SA	SA	SA	SA	SA	Unanimously strongly agree