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# **Teamwork Practices of the Manufacturing Organizations in Sri Lanka**

A

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WANNINAYAKA MUDIYANSELAGE

MANJULA SAMANPRIYA WANNINAYAKA

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## **Executive Summary**

This empirical study evaluates the existence of teamwork in the manufacturing organizations in Sri Lanka which say that they are practicing teamwork in their production processes, developing a teamwork model.

In recent years, the growth of the manufacturing industry in Sri Lanka is greatly expected and in parallel therewith, it is said that it is necessary to re-organize the work organizations. The number of companies that have introduced the team-based Toyota Production System (TPS) as a method of re-organization of workplaces are increasing. Accordingly, team-based work practices would be popular in manufacturing organizations of Sri Lanka from now on. Some work organizations say that they have been practicing team-based work practices. Until now, however, there have been few studies which have been concerned about teamwork practices in the Sri Lankan perspective. These too have focused on the relationship between teamwork and performance of the organization, but not the teamwork itself.

On the other hand, in general, Sri Lankan work organizations are considered as hierarchical which is unable to be seen in team-based organizations. And they are confronting higher absenteeism and higher labour turnover problems which are able to be solved through the teamwork. Then, one argument can arise about whether teamwork practices are actually in the manufacturing organizations, even if they say that they have been practicing teamwork in their production processes.

However, in the existing theories, there is not any distinct model in management perspective in literature to evaluate the existence of teamwork in manufacturing organizations since there is necessity to consider that development of a teamwork model. Here, the predictable teamwork model is developed based on the relationship of the characteristics of team. Therefore, the existing definitions of team and previous discussions which have utilized them, mainly, research in manufacturing organizations, are summarized to find out the characteristics of team. As the characteristics of team, multi-skills, common goal, task interdependence, team autonomy and mutual support were abstracted from preceding studies.

Based on the theoretical explanations, multi-skills, common goal, task interdependence and team autonomy depend on the way of management in an organization and mutual support takes place in the behavioural level of team, which is the working level, with the help of those characteristics. Therefore, in the current study, workers' level characteristics: multi-skill capabilities, perception of common goal, task interdependence and team autonomy, which create effect to the working level characteristic: mutual support, is evaluated and this mechanism is defined as the teamwork. And based on the typology of teamwork: teamwork in an autonomous team, semi-autonomous team and supervised team, the teamwork model is re-arranged.

A mixed methods research methodology was followed when conducting the research. In particular, the qual → QUAN triangulation was used to collect the data. Therefore, firstly, qualitative and then quantitative surveys were performed. The aims of the qualitative survey are to understand the nature of manufacturing organisations, way of work and characteristics of team. As the sample of the qualitative survey, two export-oriented garments manufacturing factories which said that there are teamwork were selected. Primary data were collected in two ways: managing semi-structured interview and non- participant observation. Next, a quantitative survey is organized having such knowledge.

Confirmation about the existence of teamwork practices in the manufacturing factories in Sri Lanka which say that they are practicing teamwork in their production process is the main objective of the empirical survey. That is, validity of the predictable teamwork model is evaluated to make a conclusion regarding teamwork in the Sri Lankan Context. As the sample of the quantitative survey, 1110 production employees from two porcelain production factories, four garments production factories and one transformer production factory in Sri Lanka which stated that there is teamwork in their processes, were recruited. Characteristics of team were measured through a self-administered questionnaire (SAQ).

The results confirmed that there is an organization, affiliated to a Japanese company, which was consistent with the predictable teamwork model for

supervised team which has absent team autonomy to any extent. This means that the organization is using both conventional and contemporary work organizational practices. Further, the mechanism of teamwork was statistically significant and revealed as an acceptable model. Typically, team features: multi-skilled capability of workers, employees' perception on their common goal and task interdependence, altogether enhance the supportive activities among the workers of the organization. In other words, multi-skills, the common goal and task interdependence make direct effects to the mutual support. Therefore, as a conclusion of the current study, in the Sri Lankan context the existence of teamwork was able to be confirmed only in the Japanese affiliated organization.

Also, according to the findings, team characteristics could be measured in the manufacturing organization in the Sri Lankan context. However, each characteristic of team was unable to be measured through all the organizations. That is, when considering organizations separately, there are different kinds of compositions of team characteristics. This confirmation of the team characteristics concludes that some manufacturing organizations in Sri Lanka are in a developing stage of teamwork.

Further, there are manufacturing organizations which follow conventional organizational practices, while saying teamwork is being used, in particular, decision making is still centralized with the management as was soundly in conventional organizations. Therefore, neither teamwork in autonomous teams nor semi-autonomous teams was able to be found in the Sri Lankan context.

Moreover, theoretical and practical implications of the study can be pointed out as follows. As the theoretical implications, confirmation of the statistically significant and acceptable teamwork model, extending existing theories of teamwork to evaluate the teamwork in the Sri Lankan context which is considered as a developing economy and the statistical confirmation of relationship between mutual support and multi-skills which has not been concerned by much research can be mentioned. As the practical implication, the findings which were obtained through the study can be used to enhance and develop the teamwork in the Sri

Lankan context. Particularly, as mentioned earlier, work organizations in Sri Lanka have been trying to redesign their workplaces by introducing a new form of workplace and they can follow the teamwork and team-based management practices in the factory in which the teamwork model was confirmed as an example. Further, there are organizations which have been taken into consideration about the human resource development through encouraging workplace learning (to create multi-skilled workers) and in the end, it is expected that these human resource development practices would help to build a knowledgeable and healthy workforce and a cerebral society in Sri Lanka.

Finally, there are research limitations, particularly, regarding statistical analysis, to generalise the findings of the Sri Lankan context and potential studies which have to be carried out to expand the practical use of teamwork in the work organizations in Sri Lanka.

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# **Chapter 1**

## **Overview and Orientation of Study**

### **1.1 Introduction of the Chapter**

The objective of this chapter is to provide a basic introduction about the study. It includes sub-sections such as background and a problem statement of the study, objects of the study and chapter organization of the study.

### **1.2 Research Background and Problem Statement**

Over half a century has passed since the introduction of teamwork debate regarding the production workplaces by Trist et al. (1987). Also, a quarter century has passed since discussions on teamwork reached its peak in Europe and the United States after “*the Machine that changed the world...*” which was written on the Toyota Production System (TPS) was published by Womack et al. (1990). Then, numerous studies have been conducted relating teamwork all over the world, mainly in the developed countries. In the early stage, teamwork was considered as an employees’-driven initiative and then it gradually became a management-driven initiative, and, in particular, at the present, teamwork is used as a mean in which competitive advantages can be obtained (Morita, 2014; Procter & Mueller, 2000).

Presently, teamwork practice has become an important discussion in the Sri Lankan context, too. In recent years, the growth of the manufacturing industry in Sri Lanka is greatly expected and in parallel therewith, it is said that it is necessary to re-organize the working organization. The number of companies that have introduced Toyota Production System (TPS) as a method of re-organization of workplaces is increasing (Wickramasinghe & Wijebahu, 2015; Kulasooriya & Chalapathi, 2014; Silva et al., 2011; Wickramasinghe & Wickramasinghe, 2011). Further, in order to promote TPS in Sri Lanka, the institute of Lean Management (Pvt) Ltd. was established in 2009 as a consulting organization. As a result, it can be assumed that the interest in teamwork will gradually increase even in Sri Lanka since, “teamwork is everything in the TPS” (Ōno, 1978, p.44) and a “work team

that emerges as the heart of the lean factory” (Womack et al., 1990, p.99).

Accordingly, team-based work practices would be popular in manufacturing organizations of Sri Lanka from now on. Some work organizations already say that they have been practicing teamwork. If anyone goes through some manufacturing organizations’ web sites, terms such as team spirit, team development, our team etc., can be found. However, until now, there are only a few studies (Lanarolle & Ratnayaka, 2014; Pathirage et al., 2012; Jayawardana & O'Donnell, 2009; Jayarathne & Reade, 2002; Forsake & Jayawardhana, 1996) which have been considered about teamwork practises in the Sri Lankan perspective. These too have focused on the relationship between teamwork and the performance of the organization, but not the teamwork *per se*.

Furthermore, there are discussions, but not so many, about the characteristics of team in the Sri Lankan context, too, even though they have not conducted many clarifications. For example, Wickramasinghe and Wickramasinghe (2017) have considered the multi-skills factor in the manufacturing organizations and, Wanninayaka (2019) has provided the evidences for ways of multi-skills development in the Sri Lankan production work organization. Also, some manufacturing organizations have established the work environment ensuring the prior requirements, such as enhancing employee participation in decision making (Wickramasinghe & Wickramasinghe, 2011; Kaluarachchi, 2010), empowerment and reduced supervisory level (Wanninayaka, 2015) for autonomous teamwork practices (Sagie & Kosowsky, 2000).

However, when we consider the management practices of work organizations in Sri Lanka, it is arguable to say that there is teamwork because most of the work organizations are identified as the organizations which have been practicing traditional work, generally. Bratton and Gold (2017) and Morita (2014) have reported that there are considerable differences between team-based organization and traditional work organizations. At the same time, Morita (2008) and Okubayashi (2002) have insisted that team-based organizations consist of features which were not in the traditional work organizations. Typically, the following

features which were in the traditional work organizations can be seen in the Sri Lankan context. Centralised decision making is identified as a characteristic of work organizations in Sri Lanka (Jayawardana et al., 2013; Kumarasighe & Hoshino, 2010; Chandrakumara & Badhwar, 2005; Chandrakumara & Sparrow, 2004; Kumarasighe & Hoshino, 2003; Gunasekara, 1999; Wijewardena & Wimalasiri, 1996; Weathersby, 1993; Nanayakkara, 1992). Moreover, Gunasekara (1999) insists, the most common supervisory style of production organizations in Sri Lanka is “Individual Decision-Making.....and non-participative” (p.15). And, weak employees’ involvement in the workplace is a critical issue in the Sri Lankan context (Vidyarathne et al., 2017). As well, practically, male dominance decision making processes can be seen in the export-oriented garments manufacturing organizations (Jayaweera, 2003). In these factories, most of the labourers are women (Bandara & Naranpanawa, 2014) and most probably, they work as the machine operators while men perform managerial functions (Gunawardana, 2014; Shaw, 2007). This export-oriented garments manufacturing industry plays a more significant role in the Sri Lankan economy as a representative manufacturing sector of Sri Lanka because it accounted for 44.7 per cent in composition of exports. Further, supervisory level workers possess overwhelming power and they urge employees to complete targets on-time by using harsh words (Ruwanpura, 2014; Gunasekara, 1999). Also, Sri Lankan work organizations have not paid much attention to existing employees training and development, for instance, job rotation is infrequent (Wickramasinghe, 2011; Wickramasinghe, 2006). In addition, as noted by Lapointe and Cucumel (2016), issues which can be seen very often in the traditional workplaces have been revealed in the work organizations in Sri Lanka, for example, employees are experiencing monotonous and repetitive work (De Silva et al., 2013), hard work (Thilakarathne, 2006) and high workload (Nanayakkara & Chandrika, 2018; Liyanage & Galhena, 2014).

Accordingly, both positive and negative perspectives regarding teamwork can be seen in the Sri Lankan context because theoretically, some scholars have discussed effectiveness of teamwork assuming the existence of teamwork and practically,

some organizations say that they have been practicing teamwork. Contrastively, some other discussions have provided evidences relating the traditional work practices. Therefore, academically, there is a necessity to deal with and find the clarifications to clear this ambiguous scenario by tackling the question: *Is there teamwork?* As well, it is very difficult to find out theoretical discussions which have concerned the existence of teamwork in the manufacturing organizations in Sri Lanka.

### **1.3 Objectives of the Study**

The fundamental objective of the present study is to confirm the existence of teamwork in the manufacturing organizations in Sri Lanka which say that they have been practicing teamwork in their production processes because the knowledge which is obtained though the study can be used to enhance and develop the teamwork in the Sri Lankan context. Moreover, exploration of human resource management (HRM) practices which are helpful for teamwork in the Sri Lankan context is another aim.

Prior to accomplishing the above practical purposes of the study, in the groundwork level, as an academic purpose, a predictable teamwork model is conceptualized as the mechanism of teamwork, clarifying the fundamental characteristics of team which can be extracted from the previous discussions regarding the team, particularly, in the manufacturing organizations, and the relationships between the characteristics of team.

### **1.4 Thesis Structure**

This thesis consists of three parts and eight chapters, as depicted in Figure 1.

Chapter one outlines the research background and question. Particularly, why teamwork should be discussed regarding the Sri Lankan perspective is presented. Then, objectives of the study and the way of arrangement of the thesis are shown.

Chapter two and three are organized to review the literature of team and teamwork. Firstly, development of literature on teamwork in the work

organizations is pointed out to distinguish team-based work practices from individual and group-based work practices. Then, expansion and the current trend of teamwork will be discussed because over half a century has passed since the introduction of teamwork debate at the workplace and also, a quarter century has passed since discussions on teamwork reached its peak in Europe and the United States. Therefore, there is necessity to explain why widely discussed teamwork should be considered again.

Then, team concept is discussed. The main objective of the present study is confirmation of the existence of teamwork in the manufacturing organization by conceptualizing a model presenting the predictable mechanism of teamwork. Here, an ideal teamwork model is developed based on the relationship of the characteristics of team. Therefore, the existing definitions of team and previous discussions which have utilized them, mainly, research in manufacturing organizations, are summarized to find out the characteristics of team. Moreover, terms which have some ambiguous clarification and have been used in the teamwork research are also reported. For instance, the terms 'team' and 'group' are used as the same concept and also as different concepts. Therefore, discussions regarding team, group and organization are carried out to explain which point of view is used in the study.

In chapter three, firstly, each characteristic of team which has been considered as the basic is introduced considering their natures, meanings and management practices which create and enhance them. Then, an ideal teamwork model is developed. Finally, based on the typology of teamwork: teamwork in an autonomous team, semi-autonomous team and supervised team, the ideal teamwork model is re-arranged because they would help to understand the kind of teamwork in the Sri Lankan context.

Chapter four describes the research methodology and design. A mixed methods research methodology is followed when conducting the research. In particular, the qual → QUAN triangulation is used to collect the data. Therefore, firstly, qualitative and then quantitative surveys are performed. The aims of the

qualitative survey are to understand the nature of manufacturing organisations, way of work and characteristics of team. As the sample of the qualitative survey, two garments manufacturing factories which said that there is teamwork are selected. Primary data are collected in two ways: that on managing semi-structured interview and non- participant observation. Collected data is analysed qualitatively, that is, data itself is used to accomplish the aims. Next, a quantitative survey is organized having such knowledge.

Confirmation about the existence of teamwork practices in the manufacturing factories in Sri Lanka which say that they are practicing teamwork in their production process is the main object of the empirical survey. That is, validity of the predictable teamwork model is evaluated to make a conclusion regarding teamwork in the Sri Lankan Context. As the sample of the quantitative survey, seven manufacturing organizations in Sri Lanka which stated that there is teamwork in their work processes are recruited. Characteristics of team are measured through a self-administered questionnaire (SAQ). As a vital prior step to conduct the actual survey, a pilot survey and pre-test are carried out in a production factory and the questionnaire is edited based on the results of them.

As the analysing methods, firstly, Exploratory Factor Analysis (EFA) is performed by using Unweighted Least Squares through the SPSS FACTOR Analysis to evaluate whether the items which are used to measure characteristics of team in each organisation are acceptable or not and the capability to summarize the items into a small number of dimensions. Then, correlation and regression analyses are also conducted using factors which are extracted from the factor analysis to see the effect from independent variables to dependent variable. Next, path analysis is performed to evaluate the causal relationship and model fit of the teamwork model through the structural equation modelling (SEM) by using Amos v. 23.0. All model estimations are conducted using the maximum likelihood method. Finally, patterns of decision-making are evaluated by using mean values and strength of the common team characteristics is compared between organizations by using the one-way analysis of variance (ANOVA) test and

multiple comparison. IBM SPSS statistic 23 version is used to calculate descriptive statistics: mean and standard deviation of variables.

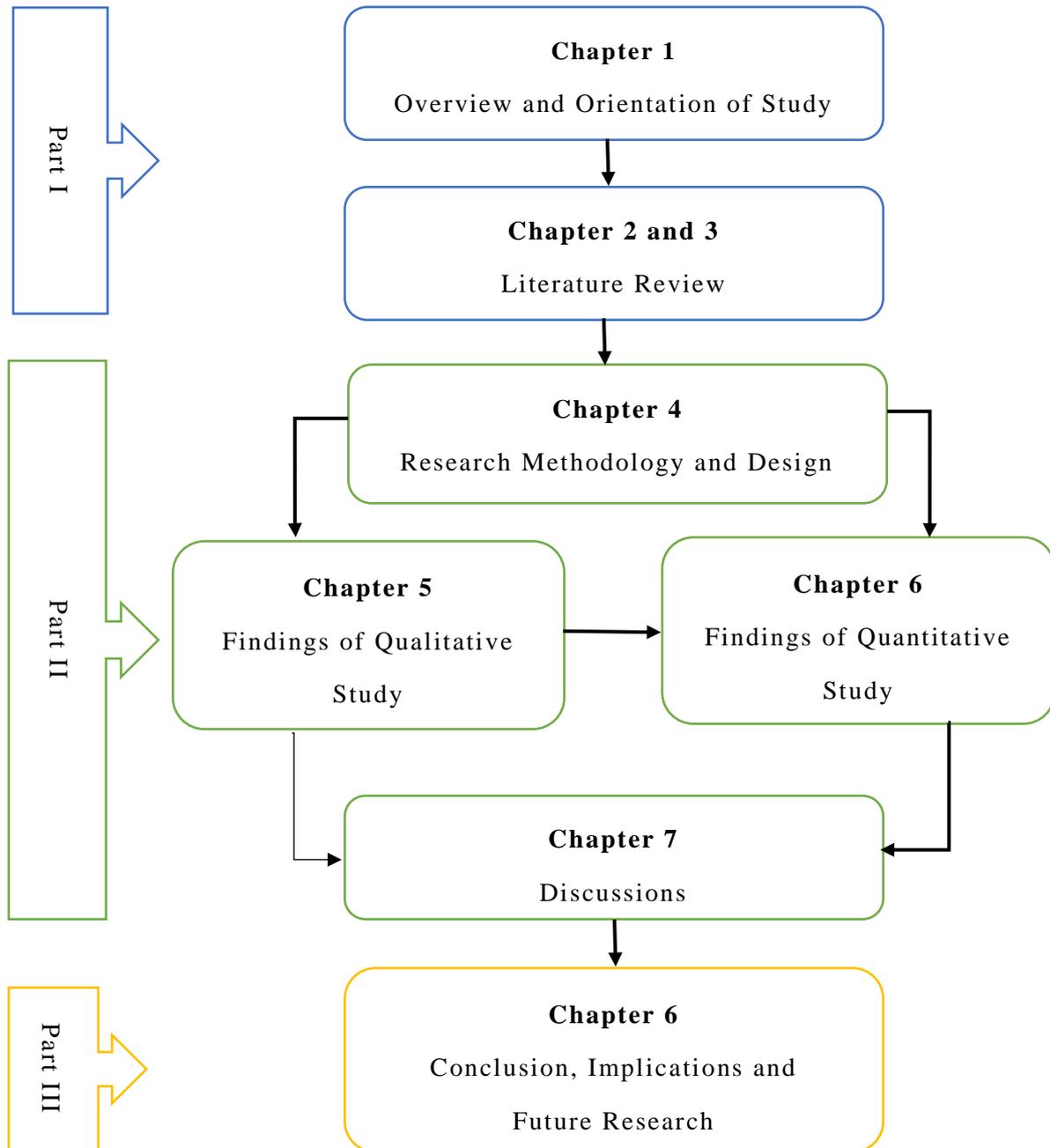
Chapter five is arranged to present the results of qualitative survey. Firstly, organizational backgrounds and demographic features are concerned. Next, HRM practices which are gathered based on five segments: Employees' training and development, goal setting, rewards system, work design and organizational structure design of the manufacturing organizations in Sri Lanka are revealed. Then, textual information which is gathered through the interviews with the production level workers and observations are shown. Finally, the nature of team characteristics which exist in the Sri Lankan context is explored.

Chapter six presents findings of the quantitative surveys. As mentioned in the methodology of the current study, mainly the qual → QUAN triangulation is used to collect the data to evaluate the existence of teamwork in the Sri Lankan context. Chapter five is used to present the "qual" by carrying out interviews and observations. Therefore, this chapter is organized to present the findings on the quantitative research, that is, the QUAN. However, in addition to the main methodology, the QUAN + qual is also used to find out evidences which are helpful to the further clarification regarding quantitative analysis results. Hence, the chapter is allocated to present those qualitative data, too, in particular, regarding organizational background and HRM practices, which is gathered through the interview with the managerial workers in each survey field. Further, to reveal a clear picture about the organizations and sectors which are surveyed in the current study, demographic features are also presented with the organizational background. Then, results on statistical analyses: exploratory factor analysis (EFA), correlation values, regression analysis and path analysis, are presented. Moreover, it consists of the findings on supplementary analyses: decision making patterns employees' awareness of common characteristics of team, too.

In chapter seven, comparisons of teamwork literature and findings of empirical survey are carried out. Practically, manufacturing organizations and workers say that they are practicing teamwork in their production processes and the study

commits to find out the theoretical basis to their explanations. Therefore, the discussions are expanded by using the literature of teamwork which was used in chapter two and three and fact findings and empirical findings which are in chapter five and six.

**Figure 1 Thesis Structure**



**Source:** Created by Author

Chapter eight presents the research conclusion. That is, the hope to find out a solution for the research question- *Is there teamwork?* - considering the nature of management practices of the organizations and the relationship between characteristics of team. And then, implications of the present study are presented in both theoretical and managerial perspectives. Finally, limitations and future studies are reported.

## **Chapter 2**

### **Theoretical Perspectives of Team and Teamwork**

#### **2.1 Introduction of the Chapter**

The objective of this chapter is to review the literature of teamwork. The chapter is arranged with sub-sections such as the development of literature of teamwork in the work organizations, diffusion and current trend of teamwork and team concept.

#### **2.2 Development of Teamwork Literature**

As reported by Kaufman (2014) and Okubayashi et al. (1997), in line with the different stages of economic development, management practices such as ways of employees training and development, goal setting, rewarding, work designing and organizational structures were also changed. At the developing stage of economy, hierarchical individuated-based management practices were effective. However, coinciding with the economic development, nature of labour and market related issues got different patterns. Then, instead of traditional individual-based management, organizations move to arrange their ways of management considering a group of workers. In the next stage, teams became the object of organizational management and employees are encouraged to practice teamwork. Therefore, Tubbs (1994) has insisted that teamwork and team-based management is not a revolutionary invention to the organizational theory because it is a result of a gradual change of management discussions. This is the story of developed countries relating the development of teamwork. However, is this orthodox idea further applicable regarding organizations in the present developing countries? The situation in the developing countries is different. While they are in the developing stage, obviously, there are organizations in the developing countries which say that they are practicing teamwork and team-based management practices in their production processes. This takes a contradictory view on the development of teamwork and team-based management practices.

On the other hand, Palla and Billy (2018) have argued about inapplicability of individual-based scientific management practices to the contemporary work organizations. According to their explanations, present days organizations are concerned about the knowledge workers' efficiency rather than manual workers. However, this argument would not be applicable to organizations in developing countries because managerial people who are in the developing countries consider about how to improve manual workers' efficiency further since on the industrial hollowing-out most of the manual workers based work organizations, namely labour-intensive, particularly manufacturing organizations, moved to the developing countries which have low labour cost (Horwitz & Mellahi, 2018; Okubayasi, 2011) such as Sri Lanka, which is the survey field in this study. As a result, it can be assumed that the traditional management practices would be used in some organizations in those counties as the developed countries which were in the same developing stage in the past.

Accordingly, it can be assumed that there may be organizations which use individual-based or group-based or team-based management practices or a combination of each management method to decide their way of management and form of organizational design. Thus, even though this study targets to discuss teamwork, there is necessity to clarify the management practices of other forms of organizational designs (individual-based and group-based), too, because it will help to obtain a clear idea about teamwork in Sri Lanka. Moreover, when the development of literature of teamwork is considered, instead of management theories which relate to teamwork, individual-based and group-based management theories are unable to be neglected (Morita, 2008).

When we consider the chronological order, firstly, as the most prominent traditional way of management, scientific management theory concerns individual level workers. In the next stage, group-based management theories such as human relation theory and behavioural science theories were developed including some features of individual-based scientific management theory. And then, human resource management (HRM) theory which concerns team-based management

practices was created while developing previous management theories which discuss how to manage the individual and group (Bratton & Gold, 2017; Kaufman, 2014; Morita, 2008; Wellins et al., 1991). Further, as Kaufman (2014) has pointed out, scientific management, human relation theory and behavioural science theories are able to be considered as the root causes of HRM. Also, socio-technical system (STS) theory can be identified as another prominent theory which concerns team-based management practices.

Accordingly, in this section, the development of literature of teamwork in the work organization will be discussed with the development of management theories. However, notable features of each management theory will be pointed out in chapter three with the discussions of characteristics of team since those elaborations will help to distinguish teamwork and other ways of workplace arrangement such as individual or group based, particularly, differences which come through the ways of training and development, goal setting, compensation calculation, work design and arrangement of organisational structure.

### **2.2.1 Individual- based Traditional Management**

In the scientific management and personal administration theories discussed about individual workers in organizations, basically, F. W. Taylor (1856-1915), the father of scientific management, introduced “the art of management” (Mukai, 1966, p.36) by using scientific methods instead of rule-of-thumb. Techniques (technologies) of production processes, machines and tools, working and controlling methods are arranged and selected, scientifically (Taylor, 1911).

Individual workers became the object of the management. And, how to improve each individual worker’s work efficiency was highly concerned. The organizational pattern is arranged as “man-to-man” basis. (Likert, 1961, p.107). It means that organizations based on the top-down management hierarchies and have centralized control (Bratton & Gold, 2017) and often close supervision takes place (Wellins et al., 1991). Jobs were assigned individually and it is called the “one-man one-job concept” (Morita, 2008: Trist, 1981). Gathering a number of

workers together was considered as a reason for systematic soldiering (Taylor, 1911). In addition, strict division of labour, standardized work task and differential piece rate consisted of the scientific management.

Then, during the decade of 1920 to 1930 in America, the personnel administration concept was formatted and developed (Okubayashi et al., 1997). A personnel department was established in the organizations to analyse and administrate human related factors, scientifically. Coordination of work is a task of the personal department in the organization. Most administrative activities such as wage determination and job analysis have been performed on an individual basis. In addition to individual-based management practice, Tead and Metcalf (1979) have also slightly reported about the group. For example, they have pointed out that “.... wherever a group of people is working together to accomplish a specific ends, there is a need of deliberate planning to make the organization function smoothly. ....this task comes under the head of personal activities” (p.29). Hence, even though there are not many discussions on group, this would be a sign for the next era which is concerned about groups.

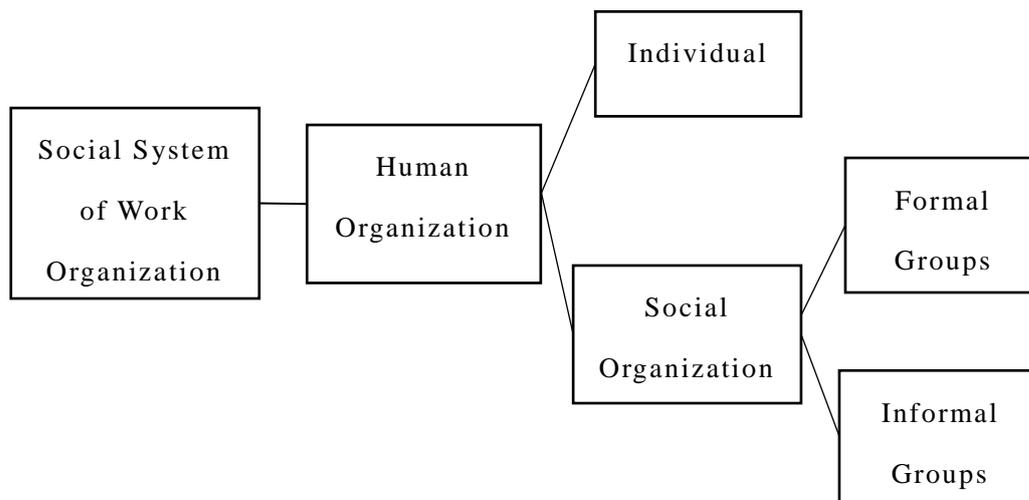
### **2.2.2 Group-based Management**

During 1930-1950, the Human Relation Theory made an enormous impact on the group-based work organizations (Morita, 2008). Human relation theory was discussed based on the experiments which were carried out to evaluate effects of working conditions and human factors on work efficiency at the Western Electronic Company (at Hawthorne plant)(Mayo, 1960). Its findings emphasized that both individual and group levels works, and in sum they are categorised as the human organization (Figure 2) (Roethlisberger & Dickson, 1950).

Further, work groups are identified as the social organisation which consists of formal and informal groups. Even though characteristics of group and group-based work were not discussed much deeper in the Human relation theory, they have insisted both individual and group basis incentives calculations and helping each other. And moreover, they have found that work groups influence to improve the

individual worker's productivity and satisfaction. While Roethlisberger and Dickson (1950) have pointed out the helping behaviour of employees in the formal work group, this is not a subject which has been paid much attention in the previous research and very often scholars have considered the employees' relationship in the informal group.

**Figure 2 Social System of Work Organization**



**Sources:** Created based on Roethlisberger and Dickson (1950) pp.565-566.

In the next decade, the period of Behavioural Science (1950s and 1960s), group based work was a prominent organizational arrangement since work group was a basic building block of the organization and these groups and organizations were introduced as participative groups and participative organizations (Likert, 1965; 1961). Practically, participative decision making and problem solving through the group meetings is performed. And, instead of man-to-man supervision which was in scientific management, group-based supervisory, that is man-to-group pattern, could be seen in the group-based organization.

However, Morita (2008) argued that the significant breakthrough of Likert's theory is only employees have opportunity to participate in decision making. Further, Likert's participative group system is able to be argued, as is a

supervision method (Kanai & Takahasi, 2008). Therefore, in the preceding studies, similar with individual-based management, organizations which use group-based management have also been identified as the traditional or conventional work organizations (Leiv 2011; Wellins et al., 1991; Orsburn et al., 1990).

### **2.2.3 Team-based Management**

The next evolutionary stage of management is the development of Human Resource Management (HRM), in the 1970s (Kaufman, 2014). As mentioned earlier, in the period of Human relation theory/Behavioural Science, the work group was a basic building block of an organization. However, in the period of HRM, work teams become a basic building block of an organization (Peters, 1987, p.297). As Bratton and Gold (2017) and Morita (2008) have insisted in the HRM, team-based organisational arrangements became widely used new forms of work organization patterns and HRM activities such as employees' training and development, goal settings, compensation, job designing and decisions-making were performed integrating teamwork.

Particularly, since the 1970s, HRM was begun to be used (Okubayasi et al., 1997), and the focus of the academic discussion goes to the Quality of Working Life (QWL) of employees (Okubayasi, 2011; Morita, 2008). Here, teamwork was identified as a basic element of QWL (Ahmad, 2013) and as the organizational forms, typically, quality circles and semi-autonomous teams are widely used (Yamada, 1988). The semi-autonomous team is discussed in the types of team, later. Quality circles, however, are not discussed in detail because the study discuss the teamwork in the formal work process in the manufacturing work organizations in Sri Lanka and theoretically, Cutcher-Gershenfled et al. (1994) have introduced that quality circles as the off-line teams, and Morita (2008) has also insisted that quality circles as a form of informal team which is carried out separately from the daily work.

Another tradition regarding teamwork literature comes from England. As reported by Trist et al. (1987) and Trist (1981), there were work organizations that

were based on the scientific management practices, in the 1950s and mechanization had been introduced to improve the productivity. As a result, technocratic bureaucracy was expanded. And also, one-man one-job had been used as a method of job design, rigid division of labour took place and rewards were calculated individually based on the personal pay notes (Trist, 1981). However, work organizations had been continually confronting various kinds of problems such as higher labour turnover and absenteeism, and low productivity. Hence, Nakagawa (2012) has argued that scientific management was unsuccessful in England. In this problematic environment, scholars introduced a new workplace arrangement, namely teams, and in parallel with this, the management practices were also changed. They concerned joint optimization of both technical factors<sup>1</sup> and social factors<sup>2</sup> of each team. This system was named as “Socio-Technical System Design<sup>3</sup> (STSD)” concept (Eijnatten, 1998) or Socio-Technical Systems (STS) theory<sup>4</sup> (Whybrow & Parker, 2000). Some scholars (Procter & Mueller,

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<sup>1</sup> Technical factors are represented by the level of mechanization/automation, unit operation and so on (Trist, 1993, p.51).

<sup>2</sup> Socio-factors include “occupational roles and their structure, methods of payments, the supervisory relationship and the work culture.” (Trist, 1993, p.51).

<sup>3</sup> Social- Technical System Design (STSD) “is an applied science that aims to improve the functioning of both the worker and organization through adaptation or fundamental redesign of contents and organization of technology and human labour tasks” ( Eijnatten, 1998, p. 1).

<sup>4</sup> In the 1950s, researchers like Trist, E., Bamfort, K. and Emery, F. carried out an experiment on a coal mining site in England with the Tavistock Institute of Human Relations (TIHR). In addition, Rice, A.K. who is a researcher, worked for the same institution and carried out his examinations on an Indian weaving shed. Based on these experiments, they suggested joint optimization of both technical factors and social factors for those coal mining sites and weaving shed. Finally, they created a remarkable work designing concept and it was named as “Socio-Technical System Design (STSD)” concept (Eijnatten, 1998). And it is called the Socio-Technical Systems (STS) theory (Whybrow & Parker, 2000) too. This STSD or STS have passed few trajectories since its origin with some improvements. Its usage has been expanded worldwide.

2000: Buchanan, 2000) consider this as the origin of teamwork literature regarding the manufacturing organizations. Therefore, Socio-Technical Systems (STS) theory can be considered as a milestone of development of teamwork literature.

Accordingly, in line with the development of management theories, teamwork and team-based management practices were developed. However, even management practices: employees' training and development, goal setting, rewarding, work design and arrangement of organisational structure, are arranged considering the teams, it does not mean that individual and group-based management practices are completely ignored since there are organizations which use both management practices, too, while teamwork is practiced. For instance, contemporary organizations use some individual-based management theories such as McGregor's (1960) X theory-Y theory, Maslow's (1954) Hierarchical Need theory and Herzberg's (1966) the Motivation-Hygiene theory to manage workers' psychological aspects, practically, even though they were developed in the era of Human Relation Theory and Behavioural Science. Nevertheless, these theories will not be discussed further in the current study since an object of the study is to explore the team-based management practices which are being performed by the manufacturing organizations to evaluate the existence of teamwork.

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Presently, this concept is introduced as "Modern Socio-Technical System Design" (Eijnatten, 1998). Prior to the development of the STSD concept, the above coal mining sites and weaving shed had been continually confronting various kinds of problems such as higher labour turnover and absenteeism, and low productivity. And after development of the STSD concept, those problems could be solved to some extent (Rice, 1993; Emery & Trist, 1969).

These studies provide a more realistic picture of how a small number of employees are working in the work system with optimizing socio and technological factors, jointly. Especially, they have found multi-skilled workers, a common goal, task interdependence, team autonomy and mutually supportive work practices from the organizations that followed STSD (Eijnatten, 1998; Emery & Trist, 1969; Trist & Bamfort, 1951).

## 2.3 Diffusion and Current Trends of Teamwork

### 2.3.1 Diffusion of Teamwork

Expansion of the teamwork concept can be discussed through four stages (Table 1). In the first stage, that is 1950 to 1960, teamwork was used to tackle labour problems such as higher labour turnover and absenteeism and low productivity (Trist et al., 1987) and autonomous work teams were used as the organizational form (Morita, 2014). However, as reported by Trist et al. (1987), managements' interest of teamwork gradually decreased and this was an obstacle to expand the teamwork. In the second stage (1970-1980), teamwork was widely used as a means of QWL improvement (Okubayashi, 2011) under humanization of work and organizational democracy (Morita, 2014). However, in the 1980s, expansion of teamwork was weakened by the economic depression (Buchanan, 2000).

**Table 1 Diffusion Stages of Teamwork\***

<b>Period</b>	<b>Key Word (s)</b>	<b>Led by</b>
1950 – 1960	Autonomous Work Team	Employee
1970 – 1980	Humanization of Work, Organizational Democracy	Employee
1990 – 2000	Lean Production System, Japanese Style Work Organization	Management
2000 –	Source of Competitive Advantages	Management

**Source:** Morita (2014, p.29)

\* Original title was changed.

In the first and second stages, teamwork was considered as an employee-driven initiative (Morita, 2014) since, most of the work organizations were concerned to improve employees satisfaction through the team-based work practices and workers had an opportunity to organize themselves as a team (Procter & Mueller, 2000). For instance, coal mining workers who were targeted by the study of autonomous work team, primarily, had a chance to develop teamwork in the

shortwall mining site (Trist et al., 1987).

However, after the 1990s, teamwork became a management-driven initiative (Procter & Mueller, 2000) since competition became more and more intense in the business world. In the period of 1990 to 2000, due to rigid competitiveness, work organizations, in particular, manufacturing organizations, put their concentration on cost reduction. Here, a lean production system draw attention all over the world as a method of cost reduction (Womack et al., 1990) and improved productivity (Jasti & Kodali, 2015). Then, work teams became a popular organizational arrangement and method of workplace restructuring (Bikfalvi et al., 2014). Further, the Japanese style work organization became a model for others and was also a reason for expansion of teamwork (Morita, 2014) since Berggren (1993), says, “Teamwork certainly played a central role in the Japanese management system” (p.7). Accordingly, as Morita (2014) pointed out, the lean production system and the Japanese style work organizations are key terms in the third period of expansion of teamwork and management of organizations that planned to obtain competitive advantages through introducing teamwork.

As the third stage, a similar trend can be seen in the fourth stage, too. Because, in the fourth stage, from the beginning of the 21<sup>st</sup> century, teamwork is profoundly embedded in the work organizations as a source of obtaining competitive advantages (Marchington, 2000). And also, team-based organizations are identified as a high performance work organization (Appelbaum et al., 2000). Moreover, teamwork is a notion of Business Process Re-engineering (BPR) (Knights & Willmott, 2000). These can also be considered as reasons which have an effect to expand teamwork and bring usage of teamwork until now.

### **2.3.2 Current Trends of Teamwork**

Over half a century has passed since the introduction of teamwork debate at the workplace and numerous studies have been conducted relating to teamwork, during this period. Nevertheless, teamwork is still popular in the manufacturing organizations, for instance, Bikfalvi et al. (2014) has pointed out that more than

70 per cent of manufacturing organizations in European countries have established team-based work practices. And, the European Working Condition Survey-2015 also revealed that more than a half of workers who were used as the sample of the survey say that teamwork is practiced in the organization where they work (Eurofound, 2016). Hence, Salas et al. (2015) say, “It is unlikely that team-based structures will be disappearing any-time in the near future” (p.616). And, academic discussions of teamwork are also increasing steadily in the psychological perspective (Mathieu et al., 2017). However, there is not a considerable amount of discussions regarding teamwork in manufacturing organizations, in the present day.

Salas et al. (2018) have insisted that there still are more unclassified things regarding teamwork. Of which, consideration of teamwork in developing countries which have not been paid much attention would be a current trend of teamwork discussion. That is because, not only teamwork is an essential discussion for work organizations in developed countries but also developing countries from now on since work organizations, particularly manufacturing organizations, moved to the low labour cost developing countries (Horwitz & Mellahi, 2018; Okubayasi, 2011). Further, Okubayasi (2011) insists that most advanced countries’ manufacturing organizations transferred their production to the developing countries and QWL, which can be achieved through teamwork, would be a subject of academic discussion in those countries. Furthermore, as mentioned earlier, there are organizations in the developing countries which say that they are practicing teamwork and team-based management practices in their production processes (Wanninayaka, 2019; 2015).

Also, currently, teamwork has become a popular workplace arrangement in different types of sectors, too. Practically, team-based work and management practices can be seen, in particular, in the service sector (Mohanty & Mohanty, 2018); health sector (Kaiser & Westers, 2018; Kaba et al., 2016; O’Malley et al., 2015; Valentine et al., 2015) and education sector (Gast et al., 2017; Huang & Lin, 2017) etc. As a result, great numbers of academic papers have been published on

teamwork practices regarding these organizations. As well, academic discussions regarding virtual teams can be identified as another present trend of teamwork (Dulebohn & Hoch, 2017; Gilson et al., 2015). In recent years, as a result of information technology development, the virtual team is becoming a popular concept among scholars and practisers, and is being used world-wide. Therefore, to get the current view of teamwork, occasionally, these academic discussions which are not related to manufacturing organizations, have also been reviewed.

## **2.4 Team Concept**

Until now, discussion relating team and teamwork was done without pointing out what they are. Therefore, primarily, identification of meaning of team and characteristics of team is considered in this section. However, discussion of the differences between team and teamwork is carried out in the next chapter.

Johnson and Johnson (1987) have said that “social scientists who have tried to define what a group is seem much like the blind men trying to describe an elephant” (p.8). Similarly, this statement is not only for group but is also applicable regarding team since, it is impossible to get distinct definition of team. As depicted in Table 2, scholars who have considered the team concept have defined teams in favour of their study purpose. Therefore, the current study uses previous definitions and explanations of team to identify the fundamental characteristics of a team.

Table 2 reveals that there are various kinds of definitions and points of view regarding the team. The current study, however, does not intend to provide another definition of the team. As is stated above, the study is arranged to evaluate the existence of teamwork in the manufacturing organizations in Sri Lanka, which say that they have been practicing teamwork in their production process, by conceptualizing a model which presents the predictable relationships between team characteristics. Therefore, primarily, the fundamental characteristics of team are extracted by using the following theoretical explanations of team.

**Table 2 Difference Points of View Regarding Team**

Authors	Points of View
Trist et al. (1987)	Autonomous team accepts responsibility for allocating its members to all roles that management requires them to fill in order to complete the prescribed task. To regulate deployment, the team works out its own system for rotating tasks and shift. Multi-skilled face workers interchangeable with others..... Interdependence rather than of separate achievement.
Wellins et al. (1991, p.3)	Team is an intact group of employees who are responsible for a “whole” work process or segment that delivers a product or service to an internal or external customer.
Mueller (1994, p. 383)	A team shall be understood as a group of people that has 8 to 15 members, is responsible for producing a well-defined output within a recognizable territory, where members rotate from job to job with some regularity, under a flexible allocation of task.
Katzenbach and Smith (1995, p.45)	Team is a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable.
West and Markiewicz (2008, p.11)	<p>Teams are social groups embedded in organizations, performing tasks that contribute to achieving the organization’s goals.</p> <p>We use the term ‘team’ to describe a group of employees which have these characteristics:</p> <ul style="list-style-type: none"> <li>● They share objectives</li> <li>● They have the necessary authority, autonomy, and resources to achieve these objectives</li> </ul>

	<ul style="list-style-type: none"> <li>● They have to work closely and interdependently to achieve these objectives</li> <li>● They have well-defined and unique roles</li> <li>● They include no fewer than 3 and no more than 15 members</li> </ul>
Nijholt and Benders (2010, p.382)	A group of employees working together to perform a task that amounts to a rounded-off part of the ongoing production process of the product or service; consisting of eight to 20 members; with the right to decide without reference to higher management .....
Leiv (2011, pp.3-5)	<p>A team typically is composed of 4 to 20 people who work together, cooperatively, provide assistance to one another and do not perform a task under rigid control of an authority. Further, team members have a common goal to accomplish.</p> <p>When talking about applications in work environments where people are interdependent the term ‘team’ is used.</p>
Robbins and Coulter (2014, p.455)	Groups whose members are working intensely on a specific, common goal using their positive synergy, individual and mutual accountability, and complementary skills.

**Note:** Morita (2008, p. 72) was referred to prepare the table.

**Sources:** (Robbins & Coulter, 2014, p.455; Leiv 2011, pp.3-5; Nijholt & Benders, 2010, p.382; West & Markiewicz, 2008, p.11; Katzenbach & Smith, 1995, p.45; Mueller, 1994, p. 383; Wellins et al., 1991, p.3; Trist et al., 1987).

**Table 3 Extraction of the Characteristics of Team**

<b>Authors</b>	<b>Research Field</b>	<b>M-SK</b>	<b>CG</b>	<b>TI</b>	<b>TA</b>	<b>MS</b>
Trist et al. (1963)	Manufacturing	○	○	○	○	○
Wellins et al. (1991)	Manufacturing	○	X	X	○	○
Mueller (1994)	Manufacturing	○	○	X	○	○
Katzenbach and Smith (1995)	Manufacturing	○	○	○	○	○
West and Markiewicz (2008)	Public, Manufacturing and Service	X	○	○	○	○
Nijholt and Benders (2010)	Manufacturing	X	○	X	○	○
Leiv (2011)	No specifications	○	○	○	○	○
Robbins and Coulter (2014)	No specifications	○	○	X	○	○

**M-SK-** Multi-Skills, **CG-** Common Goal, **TI-** Task Interdependence , **TA-** Team Autonomy, **MS-** Mutual Support

**Sources:** (Robbins & Coulter, 2014, p.455; Leiv 2011, pp.3-5; Nijholt & Benders, 2010, p.382; West & Markiewicz, 2008, p.11; Katzenbach & Smith, 1995, p.45; Mueller, 1994, p. 383; Wellins et al., 1991, p.3; Trist et al., 1987).

**Note 1:** ○ Presents the characteristics of team which have been discussed by above preceding researchers in Table 2. And although some characteristics are unable to be extracted directly from some points of view, they have been discussed in their academic writings.

**Note 2:** X represents the absence of discussion regarding team characteristics.

**Note 3:** Trist et al. (1987) have revealed that there are supportive activities that take place among the employees in the coal mining teams which they used as the research field.

**Note 4:** Although Katzenbach and Smith (1995) have not included task interdependence to their definition of team, they say that “teams do not emerge unless ...interdependence” (p.109).

**Note 5:** Levi (2011) has not presented his own idea about the multi-skills factor. But, he has used the term “complimentary skills” from Katzenbach and Smith’s definition of team to distinguish groups and teams.

**Note 6:** Team autonomy has not been concerned to define work team directly by Robbins and Coulter (2014). However, team autonomy has been identified as a characteristic of a self-managed work team which consists of the classification of work teams.

Based on the different points of view of team (Table 2), five characteristics can be pooled. And although different kinds of terms and explanations have been used by the definitions and points of view regarding the team in Table 2, terms such as multi-skills, a common goal, task interdependence, team autonomy and mutual support (Table 3) are used by the present study by considering other research which has discussed team in manufacturing organizations, too, because some of the terms, however, cannot be picked out directly from Table 2.

Accordingly, team autonomy is common in all scholarly writings. However, other characteristics have not been considered by each research. Although the pool of team characteristics varies study to study, the current research uses the following feature as the fundamental component of team to conceptualize a predictable teamwork model and they will be discussed in detail, revealing their nature and practical usages, in the next chapter.

#### -Multi-skills

(Morita, 2014; Leiv 2011; West & Markiewicz, 2008; Katzenbach & Smith, 1995; Mueller, 1994; Wellins et al., 1991; Orsburn et al., 1990; Trist et al.,

1987).

-Common Goal

(Morita, 2008; West & Markiewicz, 2008; Katzenbach & Smith, 1995; Mueller, 1994; Orsburn et al., 1990; Trist et al., 1987).

-Task Interdependence

(Ullah & Park, 2013; Suzuki, 2013; 2011; West & Markiewicz, 2008; Cohen & Bailey, 1997).

-Team Autonomy

(Morita, 2014; Nijholt & Benders, 2010; West & Markiewicz, 2008; Greenwood & Randle, 2007; Mueller, 1994; Wellins et al., 1991; Orsburn et al., 1990; Trist et al., 1987).

-Mutual Support

(Gallie et al., 2012; Morita, 2008; West & Markiewicz, 2008; Cohen & Bailey, 1997; Wellins et al., 1991; Trist et al., 1987).

Furthermore, these characteristics are helpful to reveal, clearly, whether teamwork is or is not in the manufacturing organizations in Sri Lanka, because as discussed in chapter one, when we consider management practices, it is doubtful to make a conclusion that there is teamwork in the manufacturing work organizations because manufacturing organizations in Sri Lanka seem like traditional work organizations which consist of repetitive work, experiencing monotonous feelings and management has grasped all power of control in the organization. Further, Wanninayaka (2015) has found that management involvement disturbs the practicing of supportive activities in the manufacturing workplaces.

And, regardless of having some conventional management practices, the

management in some manufacturing organizations have been set daily production targets for each production workplace as a common goal of them and production workplaces have arranged considering dependency of each worker. However, there are limitations to find out whether employees have an idea about the common goal and dependency as evaluated in the Sri Lankan context. Accordingly, the selected characteristics of team will be helpful to explain the real situation of teamwork practices in the subject manufacturing factories.

However, prior to further discussions regarding the characteristics of the team, there is a necessity to distinguish resembling concepts with team, namely, group and organization.

Regarding group and team, some scholars (Procter & Benders, 2014; Robbins & Coulter, 2014; Cascio, 2013; Appelbaum & Butt, 1994; Mueller, 1994; Champion et al., 1993; Wellins et al., 1991) have taken both of them as identical concepts, that is, teams have been explained without differentiating both concepts. However, some other research (Kozlowski & Bell, 2013; Levi, 2011; Morita, 2008; Katzenbach & Smith, 1995) has argued group and team as different concepts. The study also concurs a later point of view since, as discussed in the beginning of this chapter, conventional group-based organizations are different from team-based organizations. Also, chronologically, the team is a newer form of work organizational arrangement than group. Levi (2011) has said that “Group is a more inclusive term than team. Groups range in size from two to thousands, whereas teams have a narrow range of size” (p.4). Therefore, gathering a small number of people and a large number of people differentiate the team and group, obviously.

Also, organization seems to be identical with team by nature. West and Markiewicz (2008) have used the term “organization” in their interpretation of team. However, organization and team are different concepts. Barnard (1968) has defined an organization as a “system of consciously coordinated activities or forces of two or more person” (pp.73-74). Further, he has argued that a system is something which must be treated as a whole. However, teams are work units (Hoegl, 2005) or parts (Levi, 2011) of that whole system and therefore a number

of teams can exist in an organization.

## **2.5 Chapter Summary**

The chapter was organized to discuss the theoretical aspects of teams and teamwork including development of teamwork, the diffusion and current trend of teamwork and explanations of team concept and terms which seem to be identical with the team.

When we consider the development of teamwork, teamwork can be introduced as a result of the developmental process of management and until discussions of HRM come in, management theories are concerned with the individuals and group of employees in the work organizations, particularly labour-intensive manufacturing organizations. However, this developmental process happened in the countries which are classified as the developed nations. Meanwhile, organizations in developing countries such as Sri Lanka which is the object of the study, insist that they have been using teamwork. However, it is sceptical whether there is actually teamwork existing or not because as discussed in chapter one it seems that there are traditional management practices taking place, although they insist that they use teamwork. Therefore, to get a start on the confirmation of the teamwork existence in Sri Lanka, the development process of management was discussed.

As well, diffusion and the current trend of teamwork is also discussed because although three decades have passed since the teamwork discussion become a culminating point, teamwork is still popular academically and practically. Today, teamwork is being using as a management-driven concept to obtain competitive advantages in the market by not only the manufacturing sector but service sector, also while academic discussions regarding manufacturing organizations have dropped more than that about the service sector. However, it can be assumed that there are potential research areas regarding the labour-intensive manufacturing organizations in developing countries which have not put concentrations, largely.

Moreover, the team was compared with the concepts which seem to be identical. Then, the team concept was able to be identified as a different concept, but not

completely, which consists of characteristics such as multi-skills, common goal, task interdependence, team autonomy and mutual support in a work unit and the next chapter will discuss these characteristics, in detail.

## **Chapter 3**

### **Characteristics of Team and Development of Teamwork Model**

#### **3.1 Introduction of the Chapter**

This chapter reviews the literature of characteristics of the team: multi-skills, a common goal, task interdependence, team autonomy and mutual support. Next, a teamwork model is conceptualized to evaluate teamwork practices, concerning causal relationships of characteristics of the team. Finally, literature is derived from the previous academic sources to classify typology of team.

#### **3.2 Characteristics of Team**

In the previous chapter, five fundamental characteristics of team: multi-skills (Morita, 2014; Gallie et al., 2012; Katzenbach & Smith, 1995; Mueller, 1994; Wellins et al., 1991; Orsburn et al., 1990; Trist et al., 1987), common goal (Morita, 2008; Katzenbach & Smith, 1995; Mueller, 1994; Orsburn et al., 1990; Trist et al., 1987), task interdependence (Ullah & Park, 2013; Suzuki, 2013;2011; Cohen & Bailey, 1997), team autonomy (Morita, 2014; Nijholt & Benders, 2010;; Greenwood & Randle, 2007; Mueller, 1994; Wellins et al., 1991; Orsburn et al., 1990; Trist et al., 1987) and mutual support (Gallie et al., 2012; Morita, 2008; Cohen & Bailey, 1997; Wellins et al., 1991; Trist et al., 1987) were extracted in HRM perspective from the preceding research which has discussed about the teams in the manufacturing work organizations because, as discussed in the later sections, they are the results of the HRM practices of an organization. As well, HRM practices in a team-based organization distinguishes management practices which are in conventional individual and group-based organizations. Therefore, management practices of these organizational contexts have been outlined in Table 4 and a detailed explanation of each management practice is conducted with the relative team characteristic, hereafter.

**Table 4 Management Practices of  
Conventional Work Organizations and Team-based Work Organizations**

<b>Management Activities</b>	<b>Organizational Forms</b>	
	<b>Conventional Work Organizations</b>	<b>Team-based Work Organizations</b>
Training and Development	Training is decided systematically and created specialised workers on narrowly categorised job.	Create multi-skilled workers who can contribute to the broadly defined task. (task-based training)
Goal Setting	Goal is decided by individual basis.(One goal for one man)	Team-based goal setting. (a goal for one team)
Reward System	Calculated based on individual performance.	Calculated based on team and individual performance or only based on performance of team. Also, skill-based pay.
Work Design	Independently	Task of a team is decided considering interdependence
Organization Structural Design	Hierarchical organizational structure (man-to-man)	Flattened organizational structure

**Sources:** The table was prepared based on Wellins et al. (1991, p.6) and Orsburn et al. (1990, p. 11). Some parts were edited based on Bratton and Gold (2017), Levi (2011), Procter and Mueller (2000) and Appelbaum et al. (2000).

### **3.2.1 Multi-skills**

Before scientific management was inaugurated, in the craft model, workers were demanded to show extensive proficiency or prowess on one particular task (Klein, 1994). Employees had been using rule of thumb in their work process (Taylor, 1911). After scientific management was introduced, in the Taylorism, strict

division of labour was urged and the pattern of “one man-one job” was used for work assignment (Morita, 2008, p. 95; Trist, 1981, p.38). Workers were assigned a narrowly defined job and, therefore, required low skill to perform their job (Grachev & Rakitsky, 2013; Morita, 2008; Okubayasi, 2002; Wellins et al., 1991). Trist (1981) has introduced this as “part redundancy<sup>5</sup>” (p.38). Further, he has argued that part redundancy creates the “technocratic bureaucracy” (p.38) in the workplace and as a result, it leads to monotonous work (Grachev & Rakitsky, 2013; Zülch & Börkircher, 2012). Instead of the part redundancy, Trist (1981) suggests functional redundancy<sup>6</sup> for the team-based work organizations and the multi-skills capabilities of workers were identified as an inevitable component for team-based work organization to deal with this functional redundancy (Morita, 2008; Trist, 1981). Therefore, most of the preceding research has emphasized the importance of the multi-skills factor (Morita, 2014; Gallie et al., 2012).

As is explained by Morita (2014) and Klein (1994), multi-skills means that various kinds of knowledge and skills are obtained to perform different sorts of work in the team. In the team, however, team members work to achieve their common goal because a goal(s) for a one-team concept is used for work assignment (Morita, 2008). Hence, understanding each other’s job in the team is a very important task, since it helps to achieve their final target, collectively. Particularly, in a team, each member’s skills, knowledge level and work experience can be different. At this kind of situation, members who have less work experience or skills would seek help from their colleagues who have comparatively high work skills, knowledge and experience. Bamberger (2009) has identified this kind of

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<sup>5</sup> “The redundancy is of parts and is mechanistic. The parts are broken down so that the ultimate elements are as simple and inexpensive as possible, as with the unskilled worker in a narrow job who is cheap to replace and who takes little time to train” (Trist, 1981, p.38). This mechanistic nature of bureaucracy can be explained as technocratic bureaucracy (*ibid*).

<sup>6</sup> According to Trist (1981), based on the functional redundancy, organization expands the function of the teams to give the possibility to adaption to the flexibility of environment.

situation as the help-seeking behaviour of employees. Then, multi-skilled workers can provide that assistance to their team. Therefore, George and Jones (1997) say, having multi-skills capability would boost the mutual support of a team.

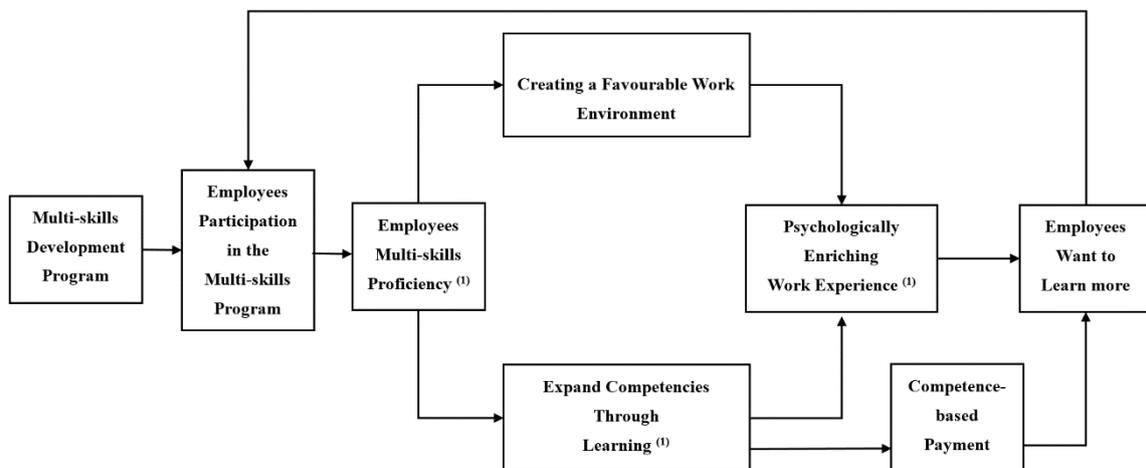
Hence, Team-based organizations hope to expand the breadth of a worker's skills to be versatile in a variety of work ranges (Shang et al., 2018). Practically, team-based organizations arrange various kinds of training programs to improve employees' multi-skills. These training programs are planned in two ways: inside and outside of the production process (Greenwood & Randle, 2007). On-the Job Training (OJT) method can be cited as an inside training way. Here, an employee can learn about the job by participating in the actual task. Job rotation is a very popular way of OJT in the work organizations (Dessler, 2013). Basically, OJT can be carried out in two ways: formal and informal OJT (Sakamoto, 2018; Sato, 2016; Dore & Sako, 1998). In the formal OJT, work organizations arrange systemized procedures to provide training to their employees. In the informal OJT, however, work organizations do not make any procedures to provide training facilities to their employees. Here, workers can learn from their colleagues or a superior at the workplace (Sakamoto, 2018; Sato, 2016; Dore & Sako, 1998). However, informal OJT is an unnoticed training method which can be used to develop multi-skills of workers, so far. As outside training methods, necessary skills and knowledge can be taken away from the actual work, practically, from the outside training centres such as technical schools. These training methods are introduced as Off-the-Job Training (Off-JT) methods (Greenwood & Randle, 2007).

By using the above kinds of means, organizations can create multi-skilled workers. On the one hand, even if they have to incur additional cost to train them (Henao et al., 2015), organizations are able to obtain advantages through the multi-skills workers such as cost reduction and flexibility. That is, multi-skills workers can be used to cover the absentees' work load of the workplace (Morita, 2008). As a result, team members can continue their work overcoming the effect from absenteeism. If it is said practically, multi-skilled workers help to balance the production line (Garg et al., 2002) and an organization which has not multi-

skills workers has to maintain relief people to cover the absenteeism (Ōno, 2003).

On the other hand, employees' capabilities to perform various kinds of tasks provide favourable benefits not only to the organizations but also employees (Smith et al., 2018; Rajendra, 2016), since by participating in multi-skills development programs, workers are also able to attain benefits. Particularly, it helps to create a favourable work environment for the workers (Ketchum & Trist, 1992). As mentioned earlier, knowing other jobs creates the supportive work environment at the workplace. Further, multi-skills workers can be liberated from the monotonous work and high work-load condition (Yoon et al., 2016; Klein, 1994). These favourable conditions might be reasons to create a favourable work environment for the workers. As result of having a favourable work environment, it enhances the psychological needs on the job, such as satisfaction (Neirotti, 2018; Sapada et al., 2018).

**Figure 3 Multi-Skills Development and Workers' Intention to Learn More**



**Sources:** Created by Author. <sup>(1)</sup> Represent extractions from Ketchum and Trist (1992) p.145.

Moreover, development of multi-skills provides chances to know new things and expand the existing capabilities of workers (Potnuru et al., 2018; Klein, 1994). These expansions of competences through the learning increases the worker's psychological needs such as personal growth (Felstead et al., 2015) and may

increase the earning of employees through the competence-based payment calculations (Kambayashi et al., 2018; Chaparro & Lora, 2017), and as a result, employees' intent to learn more (Murray & Gerhart, 2000).

Accordingly, these theoretical explanations can be summarized as Figure 3. Organizations arrange the program to expand their employees' multi-skills. This multi-skills proficiency creates a favourable work environment for workers and also expands the competences of workers. And then it increases the psychological need of employees and earnings. Finally, it increases employees' intention to learn more and intention to learn new things extends the skills through fostering employee's actual participation in the learning (Kyndt et al., 2014; Kyndt & Baert 2013).

### **3.2.2 Common goal**

In the conventional work organization, people worked to achieve the goal which was set individually (Wellins et al., 1991; Orsburn et al., 1990). As mentioned earlier, the one-man one-job principle is used to set up this individual goal (Morita, 2008; Okubayasi, 2002). Conversely, regarding the contemporary work organizations, in team-based work organizations, the goal is set on the team basis (Table 4) (Owens & Hekman, 2016; Salas et al., 2015; Morita, 2008; Katzenbach & Smith, 1995). This common goal may be their final target which they hope to or have to achieve together through the work process. Practically, the common goal of the team can be completion of a full product or service or a part of a production process (Rolfesen & Johansen, 2014). Typically, the existence of a common goal can be identified by asking the managerial level of workers in an organization about the goal-setting process, objectively. Employees' perception of team's goal, however, is also important for teamwork. Therefore, some empirical studies (Suzuki, 2013; 2011; Morita, 2008) have evaluated employees' perception regarding the goal which was set on team basis because team members' intention or awareness regarding the common goal intensifies the team members'

collectiveness (Weingart & Weldon, 1991). Moreover, it helps to build up a cooperative work environment in the workplace (Wageman & Baker, 1997), too. Due to that, a common goal and mutual support show a significant positive relationship in the team (Suzuki, 2013; 2011). As well, Suzuki (2011) says team members are jointly responsible for the achievement of the team's goal. By contrast, instead of team-based goal settings, it is also able to be performed in individual-based goal settings (Wong et al., 2009). It, however, strengthens competitiveness among team members and creates conflict situations in a team (Levi, 2011; Saavedra et al., 1993).

The previous research has used different terms such as collective goals (Owens & Hekman, 2016), shared goal (Salas et al., 2015) and a common purpose and performance goals (Katzenbach & Smith, 1995) to describe the common goal and team members' awareness of it.

Meanwhile, practically, most of the team-based organizations set their employees' incentive systems (Table 4) linking with the accomplishment of the team's goal (Garbers & Konradt, 2014; Parker et al., 2001; Locke & Latham, 1990). For example, in the apparel sector, team-based incentives are calculated on the achievement of the team's production target (Appelbaum et al., 2000). Thus, it can be assumed that team-based production incentives and employees' awareness on common goal have a relationship. Practically, to get more incentives, workers may be highly concerned about their common goal (Garbers & Konradt, 2014). One thing, however, needs to be clarified in this regard. The accomplishment of a real goal and a common goal are two different things, because, a common goal considers the existence of a team-based goal and employees' awareness about it. Conversely, achievement of a real goal represents the performance (Garbers & Konradt, 2014) of a workplace.

### **3.2.3 Task interdependence**

Task interdependence is defined as "the work flow interconnectedness of unit personnel in performing their individual task" (Van de Ven et al., 1976, p.334).

Further, Courtright et al. (2015) have defined task interdependence as “the degree to which task work is designed so that members depend upon one another for access to critical resources and create work flows that require coordinated action” (p.4). Therefore, the way of arrangement of the work flow, that is work design, decides the task interdependence of the team (Kumar et al., 2009; Morgeson & Humphrey, 2008; Hertel et al., 2004; Shea & Guzzo, 1987). Accordingly, based on the work design of a team, task independence can take place in the form of a network (Van de Ven et al., 1976) or sequentially or reciprocally (Saavedra et al., 1993). The conventional work organizations use the flow-line principle to arrange their work flow (Bratton & Gold, 2017), and the job, therefore, seems to be sequential. However, task interdependence, particularly, interconnectedness of work flow, was not much important in these work organizations because management of them mainly concerns the improvement of each worker’s efficiency by assigning a narrow task under close supervision, but not the performance of the team which works collectively to achieve the team’s goal. As a result, work designing is performed independently concerning each worker (Table 4).

Therefore, to what extent one team member’s task depends on the other decides the task interdependence, typically (Van der Vegt & Van de Vliert, 2005), and it includes dependency of work, information, ideas and other resources (Saavedra et al., 1993; Shea & Guzzo, 1987) and coordination and collaboration (Courtright et al., 2015; Van der Vegt & Janssen, 2003).

Trist, et al. (1987) have argued the technical interdependence of each work unit at a coal mining site. This is called structural task interdependence (Courtright et al., 2015) or objective task interdependence (Suzuki, 2011). Typical work flow draws a clear picture about objective task interdependence as anyone can see at a glance. On the other hand, there is a subjective task interdependence (Suzuki, 2011). It means that workers’ senses of task interdependence (Suzuki, 2013; 2011; Van der Vegt & Van de Vliert, 2005; Van der Vegt & Janssen, 2003; Van de Vegt et al., 2001; Kiggundu, 1983; 1981) and degree of such task interdependence can be varied person to person (Van Der Vegt & Van De Vliert, 2000).

Even though some scholars have omitted from the discussions task interdependence as a basic characteristic of team (Morita, 2008; Mueller, 1994; Wellins et al., 1991; Orsburn et al., 1990), there are theoretical discussions regarding task interdependence as another necessary condition for teamwork (Kozlowski & Bell, 2013; Ullah & Park, 2013; Suzuki, 2013; West & Markiewicz, 2008; Cohen & Bailey, 1997; Katzenbach & Smith, 1995; Saavedra et al., 1993). Kozlowski and Bell (2013) say without task interdependence, a collection of individuals serves more as a group than as a team. Typically, when the task of the team is arranged ensuring interdependence, members are encouraged to realize their own contribution to the progress of the team (Hertel et al., 2004), although there are not many discussions about how to improve the employees' intention of task interdependence. In addition, task interdependence enhances collectivism of workers (Ramamoorthy & Flood, 2004), cohesiveness of team members (Chen et al., 2009; Kaggundu, 1981), interaction awareness of team members (Courtright et al., 2015; Kumar et al., 2009; Somech et al., 2008) and finally, cooperative work practices of the team (Somech et al., 2008; Bachrach et al., 2006; Wageman & Baker, 1997).

#### **3.2.4 Team Autonomy**

Most of the scholars have included team autonomy to the definitions of team (Table 2 and 3) as a compulsory factor (defining factor) and some others have also introduced team autonomy as an indispensable characteristic of team (Nijholt & Benders, 2010; Greenwood & Randle, 2007) in their discussion of team. Further, Procter and Benders (2014) say the degree of autonomy will explain whether the team is strong or weak. In the beginning, Trist et al. (1987) have identified team autonomy as a component of teams at the coal mining site where the survey was carried out by them. Here, self-regulating and self-maintaining authorities had been assigned to the team. For example, when absenteeism occurred during the process, the team could arrange their work tasks to cover the effect from that absenteeism, without intervention of management.

Enehaug (2017), Amble (2013), De Treville and Antonakis (2006) and Trist et al. (1987) have introduced this team autonomy as responsible autonomy. The responsible autonomy explains the collective responsibility of team members regarding decision making. These decision making powers relate to the work scheduling, work methods, work criteria and time related matters (Rolfsen & Langeland, 2012; Morgeson & Humphrey, 2006; Jackson & Mullarkey, 2000; Breugh, 1985).

Moreover, Langfred (2000) has defined that “team autonomy is the amount of control and discretion the team is allowed in carrying out tasks assigned by the organization” (p.567). Further, Toskov and Mantarova (2015) have described team autonomy as “the extent to which the team can take over the execution of its own work” (p.106). Team autonomy gives a chance to the team members to make decisions collectively regarding on the job tasks which are performed in their teams (Cordery et al., 2010). Contradicting the argument of Mierlo et al. (2006), Langfred (2007; 2000) has stressed that team autonomy is not the aggregation of individual level autonomy to the team level. Thus, power is assigned by the organization to the team, not an individual worker. The team as a whole can make decisions regarding their work and time related matters. It means that individuals in the team make decisions collaboratively and individual self-discretion is not so important. Accordingly, most of the researchers who have studied autonomy in the manufacturing organization have used team autonomy rather than individual (Powell & Pazos, 2017; Nijholt & Benders, 2010; Pais, 2010; Leach et al., 2005; Sprigg et al., 2000). In particular, team autonomy is applicable in the production organization where the performing tasks are interdependent (Langfred, 2005; 2000). Therefore, in a way that is consistent with the research objectives of the study, team autonomy is discussed, hereafter.

Theoretically, researchers discuss the high degree or great deal of autonomy regarding decision making when on the job tasks are assigned to the team (Rolfsen & Langeland, 2012; Morgeson & Humphrey, 2006; Jackson & Mullarkey, 2000; Murakami, 1997). Practically, however, it is difficult to find out about fully

autonomous situations or a high degree of autonomy on entire tasks which were performed by the team in the work organizations which have been surveyed by the previous research. Some tasks show high mean values while other tasks indicate low mean values in those empirical findings. That is, tasks which have high mean values explain the existence of team autonomy and, contrastively, low values explain the absence of autonomy on relevant tasks. Junior et al. (2011), Robinson and Smallman, (2006) and Murakami (1997) have explained this situation as partial/semi autonomy.

Contrary to the team autonomy, there are other forms of decision making which can be observed in work organizations. In addition to the team autonomy, Sagie and Koslowsky (2000) have classified decision making forms as direction and participation.

In the form of direction, the whole decision making power is held by the managerial level. This form is called centralized decision making (O'Neill et al., 2016; Klein, 1991). This decision making pattern can be seen in the organizations which are based on scientific management theory (Wellins et al., 1991). Here, workers are only the doers under close supervision and the organizational structure is hierarchical (Table 4). This centralized decision making style can be identified as a distinguishing characteristic of traditional work organizations and team-based work organizations (Wellins et al., 1991).

Next is participative decision making. Likert (1965; 1961) has explained about this participative decision making in his theory. It is named “Participative system of organization” (Likert, 1961, p.223) and “System 4” (Likert, 1965, p.4). In this pattern, supervisory level workers make the final decision about his or her group’s work and employees can only be involved in the decision making. Employees can take part in decision making however, workers have no authority to make decisions. And, managers have a chance to ignore the employees’ ideas, when they make the final decision. This ignorance is named as “pseudo participation” (Gómez-Ruiz & Rodríguez-Rivero, 2018, p.333; Pateman, 1970, p.69). It means that employee participation can be like a window dressing. Actually, it is very difficult to get a

clear cut idea regarding whether workers' ideas consist or not in the final decisions that are made by managerial level workers such as supervisors. However, when compared with direction, there are some favourable features. Through the participative activities, employees have a chance to get knowledge about how to make decisions regarding their task. This knowledge may be helpful to create teams which have autonomy because, as mentioned earlier, teams make the decision on their task in the autonomous situation. Here, team members are able to use knowledge which is acquired through the participation.

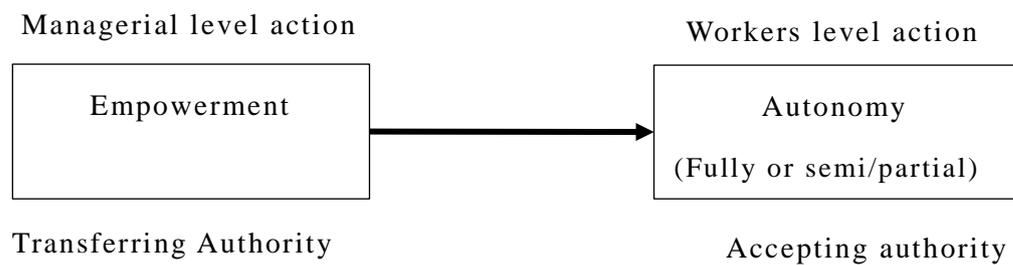
Participation is not pretended each and every time since participation of employees takes place in the teams which have autonomy (Gallie, 2013, Yukl, 2013), too. Some scholars interpret this as direct participation (Inanc et al., 2015; Gallie, 2013; Knudsen et al., 2011; Busck et al., 2010). This is because, in the team, workers participate in the decision making process in relation to the tasks, working methods, organization of working time and assessing the quality of their own work (Vašková, 2007). In employees' participation which is argued by Likert (1965; 1961), the final decision maker is the managerial level worker. In direct participation, decisions are made by the team with participation of team members (Carson et al., 2007). Accordingly, decision making which happens in the team with direct participation of team members and pseudo participation are different concepts. However, before evaluating the direct participation, the existence of autonomy has to be confirmed because direct participation in the team would be an in-depth discussion of autonomy. Therefore, primarily, the existence of team autonomy will be discussed in this study.

Another concept which needs to be considered in autonomy related discussions is empowerment since there is a positive relationship between team autonomy and empowerment (Polat et al., 2018). Empowerment can be considered as an antecedent factor of autonomy (Morita, 2008). In other words, autonomy can be a result of empowerment. This is because, practicing empowerment is a vital factor for any organization which expects to introduce autonomy to the workplaces.

Empowerment means gives employees more authority (power) to make decisions

(Robbins & Coulter, 2014). In the empowerment, management relinquishes their decision making power continuously and transfers it to the team (Hanaysha, 2016; Sagie & Koslowsky, 2000). Then, that given up power is accepted by the workers (Figure 4). Thus, to confirm the existence of team autonomy, it is an important task to consider how empowerment practices take place in the work organizations.

**Figure 4 Relationship between Empowerment and Autonomy**



**Source.** Created by author.

Accordingly, tasks carried out by the management, particularly, supervisors were transferred to the workers and as result, organizational structure was also changed by introducing flattened organizations (Table 4) through diminishing the level of managerial hierarchies (Appelbaum & Butt, 1994). This autonomous situation is an important condition to practise the supportive activities in the team (Hüffmeier & Hertel, 2011; Kalleberg et al., 2009) because an autonomous working environment provides facilities to workers who are willing to assist other members of team (Hüffmeier & Hertel, 2011). For instance, Wanninayaka (2015) found a vice versa for this circumstance in that the intervention of the supervisory level worker prevents the supportive activities among the workers in the production floors.

### **3.2.5 Mutual Support**

Mutual support is another characteristic of team (Gallie et al., 2012; Morita, 2008) which can be seen in the working level. Particularly, in the previous research

this has been called other terms such as backup behaviour (Salas et al., 2015), mutual accountability (Robbins & Coulter, 2014), peer-support (Massenberg et al., 2015), working together (Cascio, 2013), co-worker support (Koseoglu et al., 2018) and social support (Hüffmeier & Hertel, 2011; Carson et al., 2007). However, supportive activities among the workers is identified as a dimension of the social support in a work organization by some scholars (Massenberg et al., 2015).

All these terms mean the situation in which fellow workers who are in the team help each other to accomplish their final target or goal (Hüffmeier & Hertel, 2011). Therefore, considering its nature, the term ‘Mutual support’ is used in the study. Meanwhile, Carson et al. (2007) have defined mutual support as “the team members’ effort to provide emotional and psychological strength to one another” (p. 1222). However, this support is not only limited to that affective support, it also consists of tangible support (Fenlason & Beehr, 1994). Accordingly, mutual support can exist in two forms: affective and task-related tangible support (Shin et al., 2018). The affective support is rendering the emotional and psychological assistance (Carson et al., 2007) like listening sympathy and cheering up fellow workers (Hüffmeier & Hertel, 2011; Fenlason & Beehr, 1994). The task-related tangible supports consist of tangible roles such as physical and knowledge assistance to fulfil other’s job (Fenlason & Beehr, 1994). However, affective support will not be discussed in this paper. Of course, there is no objection regarding the importance of emotional and psychological support to improve the mutual support in the team. However, the current research, basically concerns typical work process level support between workers to fulfil their work task. Because of this, tangible assistance is considered as mutual support in this paper.

Not only mutual support happens in the team, but the group has also some indications regarding it. For example, Roethlisberger and Dickson (1950), during 1930-1950, in the human relation theory, found mutual support through the experiment of Bank Wiring Observation at the Hawthorne plant of the Western Electronic company. Further, in the Behavioural Science theory, Likert (1961) also has elaborated importance of mutual support in the group-based work

organizations. However, nobody has discussed mutual support in the group, as extensively and deeply as it has been considered in the literature of teamwork.

Supportive work practices are identified as the heart of the team since “it makes the team truly operate....” (McIntyre & Salas, 1995, p.26). Therefore, the team is encompassed with a mutually supportive work environment (Gallie et al., 2012; Morita, 2008; Cohen & Bailey, 1997; Wellins et al., 1991; Trist et al., 1987) in the working level. As mentioned earlier, even if the work process is arranged as a team, each member’s skills and knowledge level can be different but they will expect to accomplish their real goal or target as a team. In such a situation, tangible assistances like sharing knowledge and fulfilling another member’s work become an essential part of the team. These cooperative work practices (i.e. mutual support) create a smooth path and favourable environment to the knowledge sharing among members (Schepers & Van den Berg, 2007). Another thing is that working speed is also different member to member. Occasionally, team members who have much work experience have to provide some assistances to the members who do not reach their target. In these kinds of circumstances, understanding of other members’ assistance requirements is very important. That is, in the team, some members (e.g. a newly recruited employee) can feel a high workload and stress. Those burdens can be eased thorough supportive behaviour (Hu & Liden, 2015; Kalleberg et al., 2009). Clancy and Tornberg (2007) say, when any organization has established a mutually supportive work environment in a work team, it encourages the team member to identify another’s assistance need promptly.

Accordingly, the above theoretical explanations revealed that multi-skills, common goal, task interdependence and team autonomy factors as the workers’ level characteristics. In other words, in a team, workers have multi-skill capabilities, perception of common goal and task interdependence and autonomy to make decision. And they depend on the way of management in an organization regarding employees’ training and development, goal-setting, rewarding and designing of work and organizational structure. And, mutual support takes place

in the behavioural level of a team, which is the working level, with the help of those workers' level characteristics which depend on the management practices of an organization. In other words, in a team, workers are helping one another in their actual work process. The next part discusses this relationship between workers' level characteristics and working level feature in detail by developing a predictable model.

### **3.3 Development of Teamwork Model**

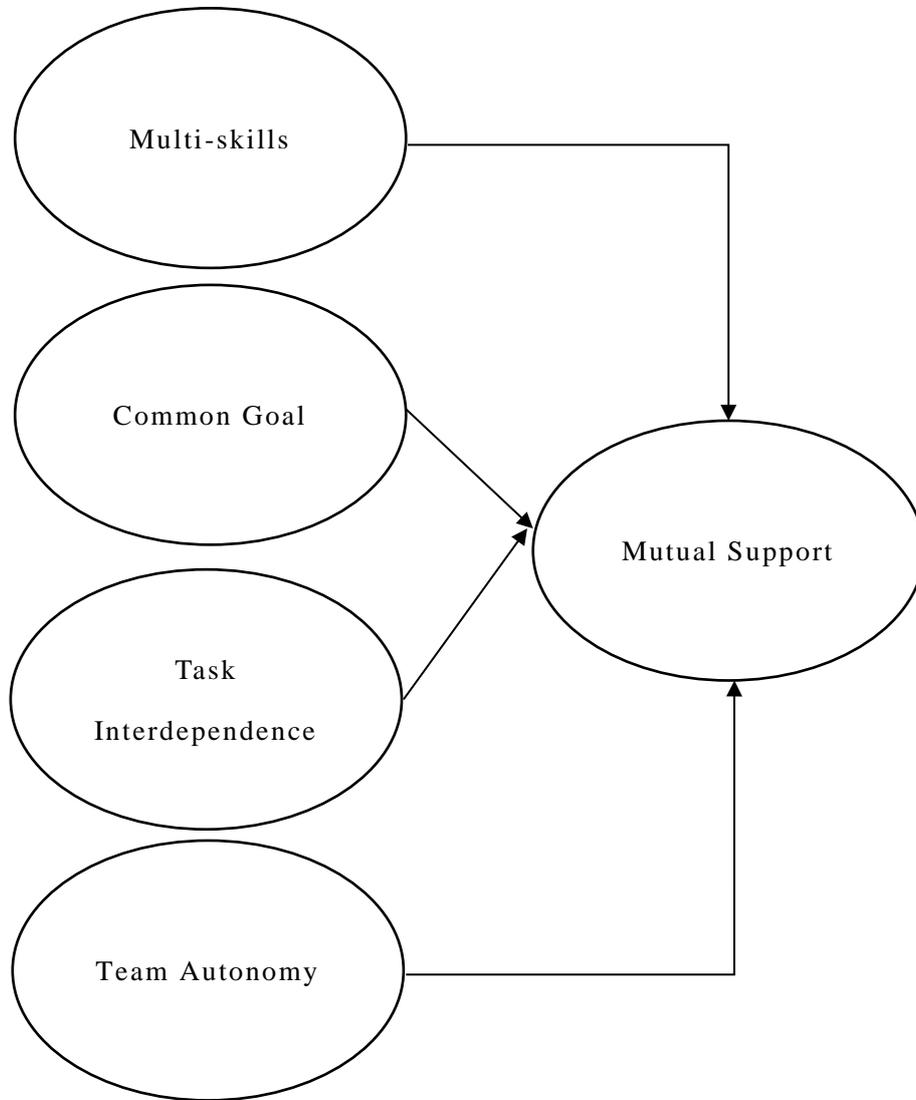
Most of the teamwork relating previous academic discussions have been focused on the effect of teamwork, the relationship between teamwork and organizational performance, particularly. As Dickinson and McIntyre (1997) point out, there are not many studies that have considered the basic principles or characteristics of team. Similarly, it is difficult to find so many academic discussions on teamwork paying much attention regarding characteristics of team, in the last two decades too.

As mentioned in the introduction, this study, particularly, aims to evaluate the existence of teamwork in the manufacturing organizations which stated that they use teamwork in their operations. However, there is not any distinct model in management perspective in the literature to evaluate the existence of teamwork in manufacturing organizations.

As the fundamental characteristics of team: multi-skills, common goal, task interdependence, team autonomy and mutual support were abstracted from the preceding studies. However, the existence of all these characteristics do not explain merely teamwork in a work organization since team and teamwork are different (Morita, 2014; 2008; Katzenbach & Smith, 1995). Although some researchers have discussed both team and teamwork without any clarification, according to Morita (2014; 2008) and Katzenbach and Smith (1995), a team has a static nature and teamwork has a dynamic nature, comparatively. Therefore, in the current study, how workers' level characteristics: multi-skill capabilities, perception of common goal and task interdependence and team autonomy, effect

on the working level characteristic: mutual support, is evaluated and this mechanism is considered as the teamwork.

**Figure 5 Ideal Teamwork Model**  
**(Teamwork Model for Full Autonomous Team)**



**Source.** Created by author.

Typically, as discussed in the previous section (3.2), although there is lack of research which has confirmed the relationship between multi-skills and mutual support, statistically, it can be assumed that the multi-skills factor enhances the mutual support of the team (George & Jones, 1997). Moreover, literature suggests that common goal and mutual support show a significant positive relationship in the team (Suzuki, 2013; 2011), task interdependence has the capability to foster the supportive activities in the team (Hu & Liden, 2015; Hüffmeier & Hertel, 2011;

Somech et al., 2008), and team autonomy enhances the mutual support in the team (Kalleberg et al., 2009).

Accordingly, referring the literature, the above ideal teamwork model (Figure 5) can be developed depicting the causal relationships between characteristics of team. Practically, the nature of teamwork can be varied organization to organization. It depends on the existence of characteristics of team and causal relationships of them. Therefore, these different kinds of nature become the base for the typology of teams. Particularly, team autonomy is the key feature which creates the typology of teams (Lapointe & Cucumel, 2016). And, teamwork also takes different patterns according to the types of team.

### **3.4 Types of Teamwork Models**

In this section, types of teamwork models are clarified based on the types of production teams. Nowadays, the word “team” is used all around the world in different sorts of forms. For instance, when we talk about the forms of team which could be in a work organization, teams such as a cross-functional team, virtual team, production team, quality control team and work study team may be visualized, firstly. However, the present study intends to consider only the production teams in the different types of manufacturing organizations.

Traditionally, based on Socio-technical system (STS) theory and Toyota Production system<sup>7</sup>, production teams are distinguished into two as autonomous

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<sup>7</sup> Toyota Production System (TPS) was developed by Toyota Motor Corporation (Wilson, 2010). Originally, it was designed to reduce the cost of manufacturing particularly by eliminating waste in the production line. This waste elimination system is supported by two pillars of the TPS. Those two pillars are Just-In-Time (JIT) and Jidoka. And, teamwork is one of the crucial requirements to carry out JIT and Jidoka in the production process. Taiichi Ōno, a person who was pioneer contributor to establish the TPS, puts deep concentration to build a team-based work method in the assembly line. He explained the importance of team by likening it with an athletic relay race. Furthermore, he was highly interested in mutual support work practices, multi-skills and training and development of the employee. Hence, teamwork is called “Tasukeai Undo-助け

teams (particularly, which were in Europe) and lean teams (which were in Japan) (Oeij et al., 2014; Proenca, 2009; Procter & Mueller, 2000). Some studies (Greenwood & Randle 2007; Cutcher-Gershenfeld et al., 1994) have used this typology to identify the nature of the teamwork practices in the production organizations, previously. And this clarification was based on the existence of team autonomy. In turn, team autonomy is the key feature in the autonomous teams and conversely, team autonomy was absent in the lean team (Lapointe & Cucumel, 2016). However, when lean teams became popular, particularly in European countries, some autonomous work aspects were incorporated (Lapointe & Cucumel, 2016; Arbós & Olivella, 2006; Liker, 2005) and then lean teams became as semi-autonomous teams (Richter et al., 2011). Further, Wormack et al. (1990) say that practically, the maximum number of tasks and responsibilities are transferred to the lean production team. And there is a system to find out the real cause and solution for any failures which occur in the workplace quickly with contribution of all members. Accordingly, responsibilities are taken by each member on the production process (Inamizu et al., 2014). Therefore, Godard (2004) has named lean teams which have any level of autonomy as “post-lean” (p.358) teams.

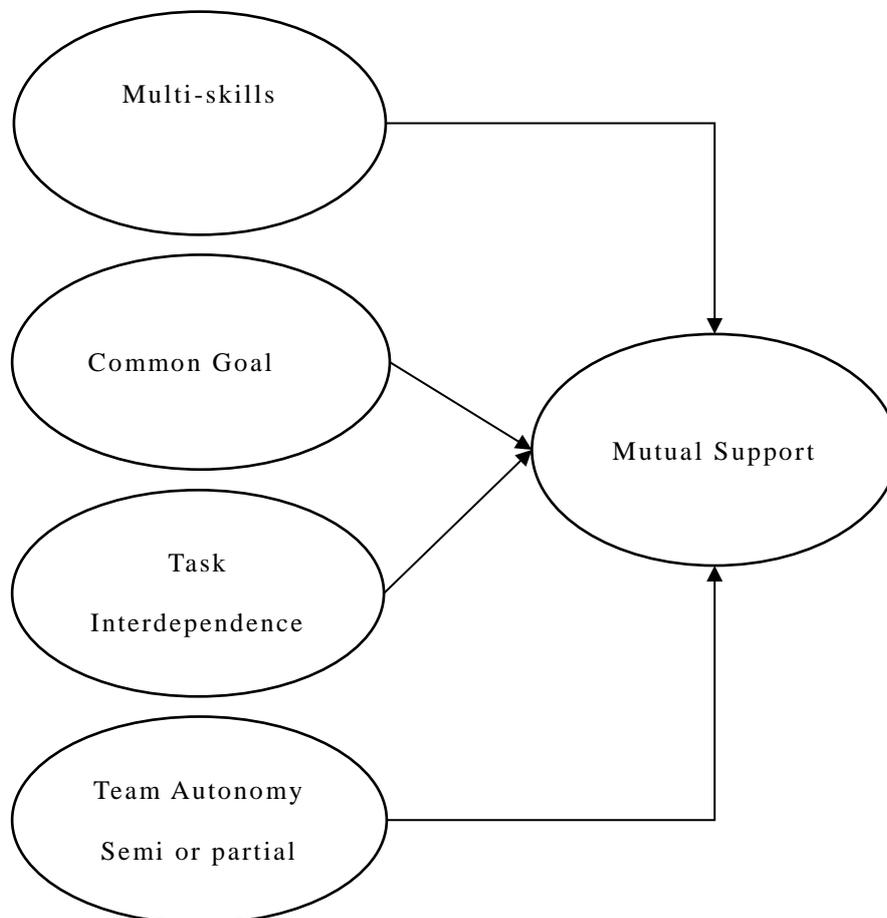
Then, instead of the traditional typology of teams, Lapointe and Cucumel (2016)

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合い運動” (Ōno, 1978, p.48). It means that all members are working by supporting each other. Moreover, he says that “Teamwork is everything” of TPS (Ōno, 1978, p.44). Finally, these TPS practices help more to improve performance and productivity of the Toyota Motor Corporation and its employees than other automobile manufacturing systems. As a consequence of that, TPS drew great attention from all over the world (Wilson, 2010; Honda, 2008). Thereafter, in 1990 Womack et al., published “The Machine that Change the World” text and it propagated knowledge about the TPS throughout the world (Benders & Morita, 2004). Further, Womack and others also considered that a work team is the heart of the lean production system. For the first, Krafcik (1988) introduced TPS as “Lean Production System” (p.44) in his article. In the Toyota production system, “less inventory and buffer” are basic elements (Ōno, 1978). In this perspective, Krafcik (1988) has called TPS as LPS, and it has been discussed through his article. Teams which have TPS or LPS based organizations are introduced as the lean teams.

have introduced an alternative typology of team as a democratic team which means that teams have autonomy and hierarchical teams to explain the teams which have not autonomy. Similarly, Kalleberg et al. (2009) have named teams which have not autonomy as supervised teams. There, however, is ambiguousness regarding autonomy in the lean teams. Therefore, it is considered that the lean teams which have autonomy belong to the democratic team and the lean teams which have not autonomy belong to the hierarchical or supervised team (Godard, 2004).

**Figure 6 Teamwork Model in a Semi-autonomous Team**



**Source.** Created by author.

However, instead of democratic teams, terms such as semi- autonomous teams, autonomous teams, self-managing teams and self-directed work teams are also used with similar meaning in the discussions of team, (Bikfalvi et al., 2014; Gallie et al., 2012; Rolfsen & Langeland, 2012), regarding teams which have autonomy,

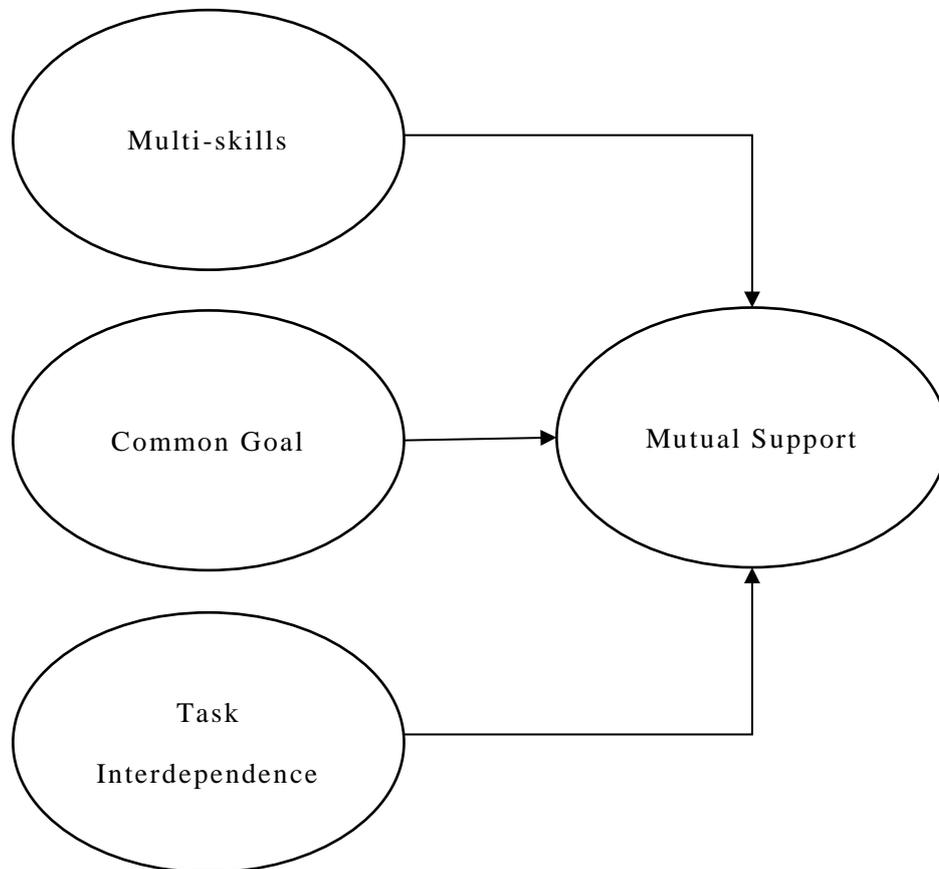
nowadays. Because, practically, when they establish the fully autonomous teams, organizations have to deal with some issues particularly with managers, workers and unions (Appelbaum et al., 2000). For instance, Morita (2008) and Appelbaum and Batt (1994) have argued that managerial level workers' willingness to relinquish the authority is a problematic situation that has to be faced by any organization which tries to introduce team autonomy since, managerial level workers are reluctant to assign their power to the worker level. And also, isolation which is made by a fully autonomous situation (Trevelyan, 2001) is a risk for organization (Haas, 2010). Therefore, as Oeij et al. (2014) and Gallie et al. (2012) reported, teams with significant or high levels of autonomy are very rare and teams which have moderate or less level of autonomy and teams which have not autonomy can be seen more often, practically.

Meanwhile, even though there are different kinds of terms to differentiate teams, terms such as autonomous, semi-autonomous and supervised are used as the typology of teams in the study, considering the existence of team autonomy. Accordingly, as there are different forms of team, the nature of teamwork may also vary depending on the type of team. Teamwork in a fully autonomous team has been shown in figure 5. And the predictable teamwork model can be rearranged as above (Figure 6), regarding an organization which has provided some extent of decision making power to the team level that is a semi-autonomous team.

In the clarification of team, both workplaces which have and have not autonomy are considered as teams. However, there is a key question to be addressed that whether a workplace which has not any level of autonomy is able to be named as a team, because, according to Table 2, most of the definitions and points of view regarding team has included autonomy as an essential factor of a team. Moreover, Jønsson and Jeppesen (2013) have reported that "autonomy has been identified as a defining attribute of teams" (p.79). Contrastively, Benders and Van Hootegem (1999) argued that it is better to say that autonomy is a variable of team rather than a defining characteristic. Also, if autonomy is considered as an essential factor of team, lean teams which have not autonomy and are being used widely all

over the world “cannot be considered to be teams at all” (Procter & Benders, 2014, p.300).

**Figure 7 Teamwork Model in a Supervised Team**



**Source.** Created by author.

Therefore, teams which have not autonomy are also possible, realistically. For example, when we consider the European Working Condition Survey-2015, teams have been distinguished as ‘no teamwork, team with no autonomy, team with some autonomy and team with full autonomy’ and typical percentages of each category is 45, 22, 20 and 13, respectively, for all European counties which have been used by the survey. The trend often is similar in each country, too (See Appendix 1). Further, they have distinguished teamwork also according to this classification as ‘no teamwork, teamwork (no autonomy), teamwork (some autonomy) and teamwork (full autonomy)’ (Eurofound, 2016). Accordingly, the teamwork model

for team which has not autonomy can be conceptualized as Figure 7 and similar with the previous research, the term ‘supervised team’ is used to introduce a team which has not autonomy, in the current study. Moreover, in the organizations which use supervised teams can be seen both the conventional and contemporary work organizational practices because while saying about the teamwork practices, decision making is still performed by the managerial level workers.

### **3.5 Chapter Summary**

Firstly, this chapter reviewed the literature regarding the characteristics of the team: multi-skills, common goal, task interdependence, team autonomy and mutual support.

In the conventional organization, based on the one-man one-job concept, it considered specialized worker on any given job. While, in the team-based organizations, the one-team one-task concept is used and this task consists of various kinds of functions or works (i.e. functional redundancy) which should be accomplished collectively. Therefore, capability to perform different kinds of function or works in the team, that is multi-skills, was required. That is why, team-based organizations arranged their employees’ trainings considering the expansion of the competence of them. A common goal is another important feature of team. A team has a goal which they have to obtain or fulfil collectively. Setting a common goal for team has a power to pull together all members as a team. Therefore, as the way of goal-setting, very often, team-based organizations consider the team as a whole, but not individual workers separately. Instead of the existence of a common goal, it is important to consider the awareness of team members of common goal to functioning the team, as discussed by the previous studies. Therefore, practically, organizations calculate team members’ incentives based on the accomplishment of this common goal to enhance the employees’ intention of it. Employees’ intention of task interdependence is also another key factor for team which has capability to enhance the functioning of team. Moreover, assigning decision making power to the employees’ team, that is team autonomy,

is also another important characteristic of a team. Team autonomy provides facilities to make collective decision making regarding the task in the team. Primarily, team autonomy was a determinant of the existence of team in an organization. However, in the present day, there are teams which have not team autonomy, as were discussed about supervised teams. Based on the theoretical explanations, multi-skills, common goal, task interdependence and team autonomy depend on the way of management in an organization (Table 4) and they can be identified as the workers' level characteristics because multi-skill capabilities, having perception of common goal and task interdependence of team members and having the capability to make the decisions, collectively, by team members. Also, mutual support is a characteristic of the team which is influenced by the above four factors because they enhance the mutual support activities of the team. Therefore, mutual support takes place in the behavioural level of team, which is the working level, with the help of those characteristics.

Then, a teamwork model was conceptualized to evaluate teamwork practices, concerning the causal relationships of characteristics of the team. Therefore, in the current study, how workers' level characteristics: multi-skills, a common goal, task interdependence and team autonomy are affected by the working level characteristic: mutual support, is evaluated. Accordingly, an ideal teamwork model (Figure 5) was developed based on the causal relationships between characteristics of the team and this mechanism was considered as the teamwork.

Finally, literature was derived from the previous academic sources to classify typology of team. Based on the type of teams, the ideal teamwork model was re-arranged as teamwork in a semi-autonomous team and supervised team because they would help to understand the kind of teamwork in the Sri Lankan context. Also, the predictable teamwork model is applicable to teamwork in a fully autonomous team.

Accordingly, theoretical aspects of teamwork were considered through chapter two and three. And, based on the theoretical background, next part will be arranged to find out and discuss the real situation of teamwork in Sri Lanka.

## **Chapter 4**

### **Research Methodology and Design**

#### **4.1 Introduction of the Chapter**

In this chapter, the research design and methodology which is used in the study is presented, in more detail. A rationale is provided for choosing a mixed methods approach (Johnson & Christensen, 2017; Schoonenboom & Johnson, 2017, Turner et al., 2017; Sato, 2015a; Denscombe, 2008; Johnson et al., 2007) as a methodology of the study. Next, details are provided about the qualitative and quantitative surveys including objectives, the population and sample, data collection methods and analysing methods. Additionally, measurements which are used in the quantitative survey are also lined out.

#### **4.2 Rationale for Selecting a Mixed Methods Approach**

A mixed methods research methodology is followed when conducting the research. A mixed method research methodology involves both qualitative and quantitative data collection and/or data analysis techniques to the same study (Johnson & Christensen, 2017; Johnson et al., 2007). Morse and Niehaus, (2009) Morse (1993) have introduced this as methodological triangulation and distinguished it as simultaneous and sequential triangulation. In sequential triangulation, as one pattern, firstly, qualitative research is carried out and thereafter, quantitative survey is performed and a notation of “qual → QUAN<sup>8</sup>” has been used to explain this sequential triangulation (Johnson & Christensen, 2017; Morse & Niehaus, 2009; Morse, 1993). The qual → QUAN triangulation provides assistance to a survey in different stages. Typically, at the research design stage, data which is collected through the qualitative method will assist the quantitative components

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<sup>8</sup> Capital letters of each notation denotes high priority or weight and a lower case letter denote lower priority or weight (Jogulu & Pansiri, 2011). In other words, the notation with capital letters is considered as the core component of the study and the notation with the lower case letters is considered as the supplement component of the study (Schoonenboom & Johnson, 2017).

of the study to develop the instruments. And, in the survey analysis stage, qualitative data support to in-depth discussions, classifications and interpretation to the quantitative survey data is used (Jogulu & Pansiri, 2011; Sieber, 1973). Also, qual → QUAN triangulation improves the accuracy of survey data and gives a clear picture of the scenario which is surveyed (Jogulu & Pansiri, 2011, Denscombe, 2008). Contrastively, in the concurrent triangulation, both qualitative and quantitative data collection and analysis happens at the same time. This concurrent mixed method also takes place in various forms, based on the priority or weight of the study. For instance, in the QUAN + qual, quantitative research takes higher priority than the qualitative one (Johnson & Christensen, 2017; Jogulu & Pansiri, 2011). Johnson and Christensen (2017) have reported that when research is designed with the additional qualitative method, in addition to the core quantitative research method, such as interviews, it provides more information to confirm and to elucidate the quantitative findings further.

Having these favourable points of view, in the study, the sequential mixed method (qual → QUAN) is used as the main research design to collect, analyse and interpret the data. Typically, in the first phase of data collection, production workers and managerial level workers are interviewed and in the second phase of data collection, self-administered survey questionnaires are distributed among the production workers. Similarly, this sequential order is also used in the data analysis stage. In addition, the concurrent mixed method (QUAN + qual) is also used to find out the HRM practices of each organization in which is gathered quantitative data, in the same time that the qualitative survey is carried out. Typically, managerial level workers are interviewed and gathered HRM related information is used to explore the quantitative results.

## **4.3 Qualitative Study**

### **4.3.1 Objectives**

The current study is going to reveal the existence of teamwork practices in the manufacturing factories in Sri Lanka which say they are practicing teamwork in

their production process. The main objectives of the qualitative survey are to be identified the nature of team characteristics, the existence of characteristics of team and organizational context which assists them in the Sri Lankan context to organize a quantitative empirical survey regarding the manufacturing organizations in Sri Lanka, at the end. To sufficiently evaluate these practices, theoretical sound measuring instruments are needed. Thus, in the first stage of the empirical survey, that is, in the qualitative research, the nature of team characteristics and the organizational context is investigated. Here, team characteristics: multi-skills, a common goal, task interdependence, team autonomy and mutual support, are put as the base of the investigation. Typically, in the first stage, capability to perform various kinds of tasks, the existence of a common goal, objective task interdependence, degree of team autonomy and the existence of mutual supporting work practices among workers are found. Furthermore, the exploration of human resource management (HRM) practices: employees' trainings and development, goal setting, rewarding, arrangement of work-flow and arrangement of organizational structure which enhance the characteristics of team in organizations is also a purpose of the arranging qualitative survey.

#### **4.3.2 Population and sample**

The qualitative study takes into account the garments manufacturing sector because the industry is the predominant manufacturing sector in the Sri Lankan economy. The sector accounts for about 45 per cent of total exports and nearly 57 per cent of total industrial production exports. As well, it has become the second largest foreign exchange earner in the country (CBSL, 2018). Further, the garments manufacturing industry has not only an economical but social perspective which also playing a major role in Sri Lanka, because it includes a substantial proportion of employment in Sri Lanka. For instance, the garments manufacturing industry consists of more than 50 per cent of the total labour force of the industrial sector in Sri Lanka (DCSSL, 2018).

Further, most of the previous research (Lanarolle & Ratnayaka, 2014; Pathirage

et al., 2012; Jayawardana & O'Donnell, 2009; Jayarathne & Reade, 2002; Forsake & Jayawardhana, 1996) which have reported teamwork related discussion in the Sri Lankan context has concerned the garments manufacturing factories as the survey fields.

Firstly, two garments manufacturing factories (hereafter, factory X & Y) were recruited, as the sample, only by considering whether teamwork exists or not. And, those details were acquired through internet and phone calls. Permissions to carry out the interview with the employees and to observe the factory floors were obtained from the human resource manager of each organization by sending request letters.

#### ***Factory X***

Total blue-collar level labour capacity of the organization is 1800 people. Production floor consists of 36 production workplaces<sup>9</sup> and a production workplace includes, averagely, 16 workers. Participants (blue-collar workers) to the study were selected from the workplace which was nominated by the factory management and 5 workers could be recruited as the sample.

#### ***Factory Y***

Presently, factory Y has provided about 930 employment opportunities for the people who are living around the factory. Organization has arranged 12 production workplaces and each of them consists of 50 workers, averagely. Participants (shop floor workers) were selected from a workplace which was nominated by the factory management. 5 workers could be recruited as the sample.

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<sup>9</sup> The organizations which have been surveyed in the current study have named the production lines and production units as teams. However, instead of the term 'team', the term: workplace, is used until the substantial evidences which can theoretically explain them as teams. However, there is not any distinct meaning for workplace (Nakahara, 2017). Meanwhile, the terms such as team member and team leader are used as it is to introduce the workers in some workplace.

### **4.3.3 Data Collection Methods**

In this section, how to collect data will be discussed. Primary data were collected in two ways: managing semi-structured interview (Seiyama, 2011) and non-participant observation (Hennink et al., 2011; Slack & Rowley, 2000). Theoretically, there are two types of non-participant observation: Direct and Indirect (Slack & Rowley, 2000). In the present study, direct non-participant observation is used. In fact, observation of the production workplaces was carried out during 3 days, in each organization. And occasionally “Walk through the space” (Hennink et al., 2011, p. 189) is used to observe each member’s work in the production workplaces of both organizations. A field note was used to record all the observations and findings. A questionnaire for the semi-structured interview was created based on theoretical components which were discussed in chapter two and three. And, the interview with the production employees was handled when they were carrying out the production tasks.

Additional data was collected through the notice board, company reports and publications of each organization. This qualitative survey was carried out from August to September, 2014.

### **4.3.4 Analysing methods**

Collected data is analysed qualitatively (Seiyama, 2011), primarily. This is because, in this field studies, almost all data are textual and collected from a small number of interviewees through the above mentioned data collection methods. Finally, the author intends to use data itself to make a questionnaire for a quantitative survey and interpret statistical analysis data to make a conclusion regarding the teamwork in the Sri Lankan context.

## **4.4 Quantitative Study**

### **4.4.1 Objectives**

Arranging the quantitative study is the next step of the sequential methodology. The main objective of the quantitative study is to gather quantitative data to reveal

the existence of teamwork, confirming an acceptable teamwork model, in the manufacturing factories in Sri Lanka which say they have been practicing teamwork in their production process. In other words, the confirmation of the causal relationship between the characteristics of team, which depicts the mechanism of teamwork, is the objective of this quantitative survey.

#### **4.4.2 Population and sample**

The target survey fields for the study are two porcelain manufacturing factories, four garments manufacturing factories and one transformer manufacturing factory in Sri Lanka that state that there is teamwork in their production processes (confirmed by phone calls and preceding articles), in sum, seven manufacturing organizations. These factories are, hereafter, labelled as A, B (porcelain factories), C, D, E, F (garments factories) and G (transformer factory). Production workers in all factories were selected as the target population for the study. Production line and units have been named as the teams in all the organizations. In sum, the sample size is 1110 production employees who are working in 63 production workplaces. The sample sizes of factories A to G have been given below, respectively.

##### ***Factory A***

The total number of production workers is 892 who belong to 23 production workplaces in factory A. As a sample, 203 workers selected from 12 production lines in the Biscuit inspection, Glazing, White-ware inspection and Decoration and Decoration inspection. One production workplace consists of 10 – 30 workers.

##### ***Factory B***

850 production workers are working in the 30 production workplaces in factory B. 210 production workers were recruited as a sample of the study from 12 production workplaces which belong to Casting, white-ware reduction firing, white-ware oxidation firing, White-ware inspection and Decoration and Decoration inspection departments. Employees of one production workplace are 6

to 25.

***Factory C***

There are 396 production workers and 14 production workplaces. As a sample, 200 production workers were selected from 9 production workplaces. One production workplace consists of about 24 workers, averagely.

***Factory D***

Nearly 105 workers are involved to produce garments in this factory. 4 production workplaces out of 5 were selected and 78 people joined the survey. One production workplace consists of 13-26 workers.

***Factory E***

In factory E, there are 450 direct production workers and 12 production workplaces, in which, 152 production workers were required from 8 production workplaces as the sample of the study. Average labour capacity of one production workplace is 20 workers.

***Factory F***

There are two working shifts per day. Nearly 600 workers are used to perform production tasks in one shift. They have arranged their production layout including 36 production workplaces. In this study, 117 production workers could be selected from 9 workplaces as the sample. There are 18 members in a workplace which is based on the “Zig-Zag” module and 7 members in a workplace which is based on the “Stand Module” (These two modules will be discussed in the next chapter, in detail). Workers who are working in shift 1, which operates between 6 a.m. to 2 p.m., were selected to carry out the survey.

***Factory G***

The total number of production workers is about 650 (per one shift) and belong to 25 production workplaces in factory G. As a sample, 150 workers were selected from 9 production workplaces. There are two working shifts per day (Day and Night). In this study, workers who are working in the day shift were selected.

#### **4.4.3 Data collection methods**

Variables of multi-skills, common goal, task interdependence, team autonomy and mutual support were measured creating a questionnaire by using the preceding research on teamwork. As well, some findings which were gathered from qualitative study are also taken into account to create the questionnaire for quantitative survey. Particularly, employees' intention of a common goal and task interdependence factors were included in the quantitative research other than team characteristics which have been used in the field study. This is because, qualitative findings explain the existence of common goal and task interdependence in the manufacturing work organization in Sri Lanka, practically, a daily production target is the common goal and tasks are technically interdependent in the workplace. In addition to this, as reported in chapter two and three, literature of teamwork have pointed out that a subjective common goal and task interdependence are also important characteristics of team.

The self-administered survey questionnaires were distributed among the shop-floor level workers with the help of supervisory level workers and members of the Human Resource Department in each organization. Questionnaires were handed over to each employee putting in an envelope. Further, a pencil was given as a present for each employee with the questionnaire. In the same time, some qualitative data was collected conducting interviews with managerial level workers. All these surveys were carried out in February and March, 2017.

Primarily, questions were in Japanese and English languages. However, before distributing the questionnaire, all items were translated into the Sinhala language. Moreover, as a vital prior step to conduct the actual survey, a pilot survey (Creswell, 2014; Maxwell, 2013) and pre-test (Sato, 2017b; Seiyama, 2011) were carried out in a garments manufacturing factory. The questionnaire which was used in the pilot survey is in Appendix 2. Based on the pilot survey and pre-test results, mainly, scales which were used to measure team autonomy were replaced from five- point Likert-type to typical scales (these typical scales will be pointed out in the latter part of this section) since, participants had no idea on team autonomy

what actually is hoped to mean by the survey. In addition, a number of items were added to the final questionnaire (see Appendix 3) to evaluate common goal, task interdependence and mutual support than were used in the pilot survey. Also, language editions were regarding the variables.

#### **4.4.4 Measurements**

The following measurements were used to evaluate the characteristics of team. The responses on multi-skills, common goal, task interdependence and mutual support were recorded on five- point Likert-type scales with “strongly disagree” to “strongly agree”.

##### **1. Multi-skills**

Multi-skills were assessed with three items which were taken from a questionnaire which has been used to evaluate teamwork in Japan, the United Kingdom and China by Morita (2008). Those items are “I can perform more than one task in the team”, “Team members of my team know each other’s job” and “I can cover absentee work in my team”.

##### **2. Common goal**

Common goal was measured by using three items, “I know our team’s final goal” “In my team, we are jointly responsible for workplace results” and “In my team, we have a clear goal to be achieved as a team” (Suzuki, 2011; Morita, 2008).

##### **3. Task interdependence**

Task interdependence was evaluated with six items such as “I have to obtain information and advice from my colleagues to complete my work”, “I have to depend on my colleagues for the start of my work”, “In order to complete their work, my colleagues have to obtain information and advice from me”, “I need to collaborate with my colleagues to perform my job well”, “Team members frequently have to coordinate their effort with each other” and “We cannot

complete a target unless everyone contributes” (Van der Vegt & Janssen, 2003; Van der Vegt et al., 2001; 2000; Kiggundu, 1983).

#### **4. Mutual support**

Mutual support was assessed by using five items which were taken from Morita (2008) and Champion et al. (1993). “If I got into difficulty at work, my section members help me”. “I help my workmates when they have work problems on the line” “If any problem occurred on my work, it is resolved in discussing with my colleagues”, “On my day off, when I finish my daily work, I help someone who is not finished” and “Members of my team share information with other team members about our work”.

#### **5. Team Autonomy**

Murakami (1997) has used a typical way to measure the autonomy level in the team identifying tasks which should be done by a team. He has evaluated the level of autonomy in 19 car manufacturing organizations in the USA, Europe and Japan. After that, Morita (2008) has also used a similar way to understand the decision making party in the manufacturing organizations in England. Those scales are re-arranged as follows to give a clear meaning even to shop-floor level workers who have not received much education in a Sri Lankan work context. Further, one scale is newly added to this survey as “Do not know who makes the decision” since, there may be employees who do not have interest or know about who makes the decision in an organization.

1. Decide by the Management
2. Decide by the Management discussing with us
3. Decide by our team discussing with the Management
4. Decide by our team
5. Do not know who makes the decisions

In the team-based organizations which have team autonomy, decision making

tasks; time, work, workers' and quality related matters are performed by teams (Jønsson & Jeppesen, 2013; Morita, 2008; Jackson & Mullarkey, 2000; Murakami, 1997). Therefore, following six task are used to measure team autonomy.

1. Working pace
2. Starting time of work
3. Finishing time of work
4. Work methods (way of work)
5. Exchange team members within workplace
6. Quality control matters

Work pace decided the working speed of the workers. For example, in the garments production factory, decision making on work pace concerns about who should decide production quantity (production target) which has to be produced within the working-day by the production workplace. Starting and finishing time of the work was considered by the decision making party on time related matters. The work method consisted of the way of work. Exchanging team members within the team was considered about who should decide members' rotation within the team.

Other than the above five factors, demographic and organizational data such as gender, marital status, age, tenure, education level and salary level are collected through the questionnaire. Also, employee perception regarding teamwork "the people in my production workplace work as a team (Kalleberg et al., 2009) and "I am always trying to work as a team member" (Jackson, 2002), employees' work experience in other work organizations, reasons to leave from a work organization where they had worked before joining the present firm and the satisfaction level regarding the supervisory or immediate managerial level workers and their support are asked by using the same questionnaire.

## **6. Control Variables**

Demographic features such as gender, age, tenure, marital status education and salary are used as the control variables since employees' perception regarding the organizational climate, such as supportive work and common goal perception, can be controlled by them (Chae et al., 2019; Shin et al., 2018; Baeriswyl et al., 2017; Irawanto, 2015; Lee & Yang, 2015; Wu et al., 2015; Tillman et al., 2010).

### **4.4.5 Analysing methods**

The IBM SPSS statistic 23 version and Amos 23 version are used to carry out analysis. The following statistical analyses are performed for each organization and one sample (aggregating all data). As well, occasionally, analyses are also conducted for each sector (porcelain, garments and transformer).

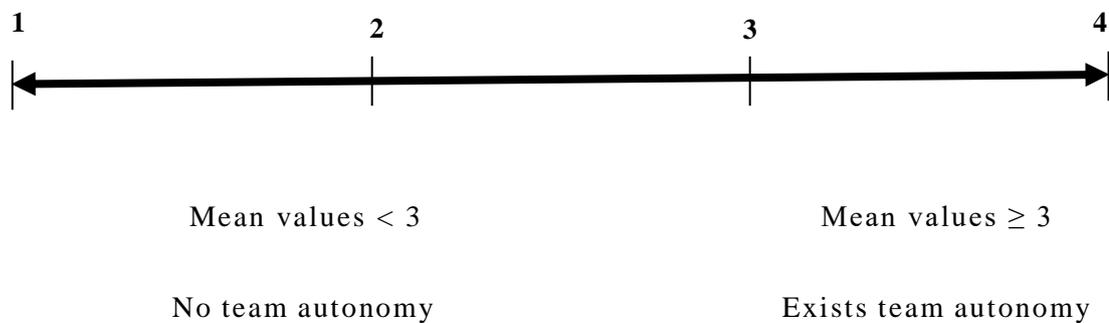
Firstly, Exploratory Factor Analysis (EFA) is performed by using Unweighted Least Squares through the SPSS FACTOR Analysis to evaluate the validity of items which are used to measure multi-skills, common goal, task interdependence, team autonomy and mutual support factors. As an extraction method, Promax rotation is used since, when there is not any strong theoretical background to prove no correlation between factors, it is better to use an oblique rotation method such as Promax (Yamagiwa & Hattori, 2016; Oda, 2014; Field, 2013). Here, based on the theoretical explanations, it can be assumed that there are relationships between multi-skills, common goal, task interdependence, team autonomy and mutual support factors. For instance, Chen et al. 2009 and Van der Vegt and Janssen (2003) have proved that correlation between common goal and task interdependence, statistically.

Secondly, to find out the relationship between characteristics of team, correlational values are evaluated. Further, regression analysis was conducted taking into account the conceptual models of teamwork.

Next, the path analysis is performed through the structural equation modelling (SEM) considering the predictable relationships and models to evaluate the teamwork in the Sri Lankan context.

Finally, supplementary analyses are carried out. Here, pattern of decision making in each organization is evaluated because, as discussed in the literature review, there are kinds of decision making patterns which can be seen in an organization such as autonomous (fully or partial), direction and participation. And this is helpful to understand the typology of teamwork and to name the factor which will be extracted from the factor analysis regarding items which are used to measure team autonomy. Therefore, decision making patterns are distinguished by using the mean values of the tasks which are used to evaluate team autonomy and figure 8.

**Figure 8 Scales of Decision Makings Patterns**



**Source.** Created by author.

**Note:** When mean values are calculated, scale number five (Do not know who makes the decisions) is set as a missing value. Therefore, Figure 8 was created excluding scale five.

In the first level (Decide by management), management makes each and every decision of employees. So-called centralized decision making (O'Neill et al., 2016; Klein, 1991) or direction (Sagie & Kosowsky, 2000). In the direction or centralized decision making, mean values get equal or more than one and less than two. In the second level (Decide by management discussing with us), workers participate to make decisions by providing suggestions. This can be introduced as a participative decision making pattern (mean values are two or in between two and three). However, there is possibility for it become pseudo. Accordingly, task

which mean value is less than three depicts the absence of autonomy. In the third level (Decide by our team discussing with management), teams have authority to make decisions. In the fourth level (Decide by team), the team has full authority to make decisions (Murakami, 1997). Accordingly, the third and fourth levels (when mean values are equal or more than three) are considered to be autonomous without considering the strength of it since the decision maker is the team in both levels.

Then, to find out similarities and differences between common characteristics of team in the Sri Lankan context, One-way Univariate Analyses of Variance (ANOVA) is performed as a supplementary analysis. Meanwhile, when interpretations are made only on ANOVA results, there is possibility for the Type-One Error to occur (Yamagiwa & Hattori, 2016; Field, 2013). It means, groups which are not significantly different (Not violate null hypothesis) are put into the group which has significant differences. To avoid this error, a multiple comparison can be performed by using Bonferroni tests (Yamagiwa & Hattori, 2016; Field, 2013) since, Yamagiwa and Hattori (2016) say, when comparisons are carried out between 3 or more groups, it is better to perform multiple comparison such as Bonferroni test.

#### **4.5 Chapter Summary**

Chapter four describes the research methodology and design. A mixed methods research methodology is followed when conducting the research. In particular, the qual → QUAN triangulation is used to collect the data. Therefore, firstly, qualitative and then quantitative surveys are performed. The aims of the qualitative survey are to understand the nature of manufacturing organisations, way of work and characteristics of team. As the sample of the qualitative survey, two export-oriented garments manufacturing factories which said that there is teamwork were selected. Primary data were collected in two ways: managing semi-structured interview and non-participant observation. Collected data is analysed qualitatively, that is, data itself is used to accomplish the aims. Next, quantitative

analysis is organized having such knowledge.

Confirmation about the existence of teamwork practices in the manufacturing factories in Sri Lanka which say that they are practicing teamwork in their production process is the main objective of the empirical survey. That is, validity of the predictable teamwork model is evaluated to make a conclusion regarding teamwork in the Sri Lankan Context. As the sample of the quantitative survey, 1110 production employees from two porcelain production factories, four garments production factories and one transformer production factory in Sri Lanka which stated that there is teamwork in their processes, were recruited. Characteristics of team were measured through a self-administered questionnaire (SAQ). As a vital prior step to conduct the actual survey, a pilot survey and pre-test were carried out in a production factory and the questionnaire is edited based on the results of them.

As the analysing methods, firstly, Exploratory Factor Analysis (EFA) is performed by using Unweighted Least Squares through the SPSS FACTOR Analysis to evaluate whether the items which are used to measure characteristics of team in each organisation are acceptable or not and the capability to summarize the items into a small number of dimensions. Then, correlation and regression analyses are also conducted using factors which were extracted from the factor analysis to see effect from independent variables to the dependent variable. Next, path analysis is performed to evaluate the causal relationship and model fit of the teamwork model through the structural equation modelling (SEM) by using Amos v. 23.0. All model estimations are conducted using the maximum likelihood method. Additionally, decision making pattern of each organization is evaluated and strength of the common team characteristics is compared between organizations by using the one-way analysis of variance (ANOVA) test and multiple comparison. And, IBM SPSS statistic 23 is used to calculate descriptive statistics: mean and standard deviation of variables.

Accordingly, the next two chapters present the findings of both the qualitative and quantitative survey.

## **Chapter 5**

### **Findings of the Qualitative Survey and Nature of Team Characteristics of the Manufacturing Organizations in Sri Lanka**

#### **5.1 Introduction of the Chapter**

This chapter is arranged to present the findings of the qualitative survey and the nature of team characteristics in the manufacturing organizations in Sri Lanka. Firstly, organizational backgrounds and demographic features are concerned. Next, the information regarding the HRM practices which was gathered based on the five segments: Employees' training and development, goal setting, rewards system, work design and organizational structure design, of the manufacturing organizations in Sri Lanka is revealed. Then, textual information which was collected through the interviews with the production level workers and observations are shown. Finally, the nature of team characteristics in the Sri Lankan context is explored.

#### **5.2 Organizational and Demographic Features**

Factory X is one of the branches which is owned by south Asia's largest garments manufacturer. The mother company was established in 1987 as a small garment manufacturer. However, nowadays the company is operating all over the world with more than 30 branches and with a family of over 55000 peoples. Toyota Production System (TPS) has been used to arrange their operating system to improve efficiency and faster turnaround times. Also, the company can be identified as a pioneer TPS introducer of garment manufacturing in Sri Lanka.

Their production capacity is 75000 pieces per day. There are two working shifts and shift A is starting at 6 a.m. and ending at 2 p.m. and Shift B is during the time period of 2-10 p.m. and works Monday to Saturday. Averagely, each working shift consists of 900 blue-collar level workers. Most of the employees are coming from rural areas by using the firm's transport service. According to the factory

information, more than 90 per cent of workers are women.

Regarding factory Y, the mother company was originated in 1988 under local ownership and presently, they have totally 5 branches island wide. Factory Y has been started in 2003. In the blue-collar level workers, more than 80 per cent of them are women labourers. The working day starts at 8 a.m. and ends at 6 p.m. and they work Monday to Saturday (Saturday 8 a.m. to 1 p.m.). Their production capacity is more than 75000-100000 pieces per month.

### **5.3 HRM Practices**

HRM practices are outlined based on the following five parts.

- Employees' training and development
- Goal setting
- Rewards system
- Work design
- Organizational structure design

#### **5.3.1 Employees' Training and Development**

In factory X, there is a training school to provide training facilities for the newcomers. Newly recruited employees have to get 3 months training from the training school. However, based on their skill, the training period can be changed. After the end of the training period, each trainee is put into a production workplace and identified as a team member. There is a 3 month post-training evaluation program, which is performed by the training unit for new team members.

Further, the Multi-skill Development Programme (MSDP) (see Appendix 4) has been designed to train existing workers. According to the Multi-skill Development (MSD) unit, they have to train 48 team members per week on different kinds of tasks. The MSD unit provides 3 days training for team members with one to one just-in-time coaching. Every team member should know at least 5 tasks of the production. Each skill has been divided into three groups: can perform the work safely with quality, within cycle time and with supervision, can perform the work

safely with quality, within cycle time and without supervision and can teach. As well, the team leadership development program is used to create successful team leaders. Occasionally, some events and games are organized to build up team spirit within the team members. According to factory management, in the next step, they hope to train team members to repair their machines themselves. This is because, they have planned to establish “Self-managing team concept” in the organization, in future. Under this program, they hope to develop autonomous work teams.

In factory Y, the training unit provides a 3 week training session for newly recruited employees. After that, based on their skills and capabilities, some newcomers are put into a real production workplace and others are assigned to the specially established production workplace called as the “Central Process Unit” (CPU), until reaching the required production speed. These workers are identified as training machine operators (TMO) and from time to time replaced to cover absentee’s work in any production workplace. There is no training program for existing workers. Training machine operators are promoted to machine operator (grade C) after 3 months and other machine operators (MO) are categorized as “B, A\*, A\*\*, A\*\*\* and super grade (jumper level).

### **5.3.2 Goal Settings**

In factory X, each production workplace has a goal which should be accomplished, collectively. This goal is a daily production target which should be attained by the production workplace. Every morning, a team leader informs her members regarding the daily target and writes it down on the productivity handling board. This daily production target for each production workplace is decided by the work study department of the organization. The production goal is determined based on the Standard Minute Value (SMV)<sup>10</sup>.

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<sup>10</sup> According to the HR manager of factory X, firstly, the standard time which is needed to fulfil each element of a product is calculated, in seconds. Then, seconds are summed up which are needed to complete all the elements of a product. Finally, total seconds is converted into minutes and this is called as Standard Minute Value (SMV).

In factory Y, each production workplace has a daily production target which should be attained, collectively and individually. In other words, the production target which has been set for the whole production line can be considered as the goal of the production workplace and there is an individual goal which should be accomplished individually within the working hours of a day. These daily production targets are decided by the work study department of the organization, based on the Standard Minute Value (SMV).

### 5.3.3 Reward System

In factory X, monthly salary of a blue-collar worker of the production workplace is calculated as follows.

$$\text{Salary} = \text{Basic Salary} + [\text{Production Incentive} + \text{Bonus}] + \text{Attendance Incentives}$$

There is an individual difference regarding basic salary. However, the production incentives and bonuses of the workers are calculated based on the target completion of the production workplace as a whole, that is, performance of each workplace. When the workplace reaches or makes more than the production target, employees can earn the production incentive and bonus. For instance, employee production incentives and bonuses on August 01<sup>st</sup> were higher than on September 01<sup>st</sup> (see Appendix 5) since, workplace efficiency on August 01<sup>st</sup> was higher than on September 01<sup>st</sup>. Further, attendance incentives are also calculated on the collective basis. Typically, each workplace has two leaves for a month and the team has to manage the leave within this limitation. If they take leave more than two days, they have not eligibility to have the attendance incentives. Another thing is that the team leader is paid an extra 2000 rupees for his or her post.

In factory Y, production line worker's monthly salary is calculated as follows.

$$\text{Salary} = \text{Basic salary} + \text{Production incentives} + \text{Service incentives} \\ + \text{Attendance incentives}$$

Basic salaries vary, worker to worker. Production incentives are calculated on both an individual and collective basis. It means the performance of an individual

and the workplace as a whole is subjected to calculate production incentives. However, other services (incentives for tenure of the factory) and attendance incentives are calculated based on an individual basis.

#### **5.3.4 Work Design (Production Process)**

The production process of the garment manufacturing factories (see Appendix 6) reveals that there are various kinds of tasks that have to be fulfilled to finish an order. However, in the survey, one production workplace and its work-flow was observed and it will be clarified step by step, hereafter.

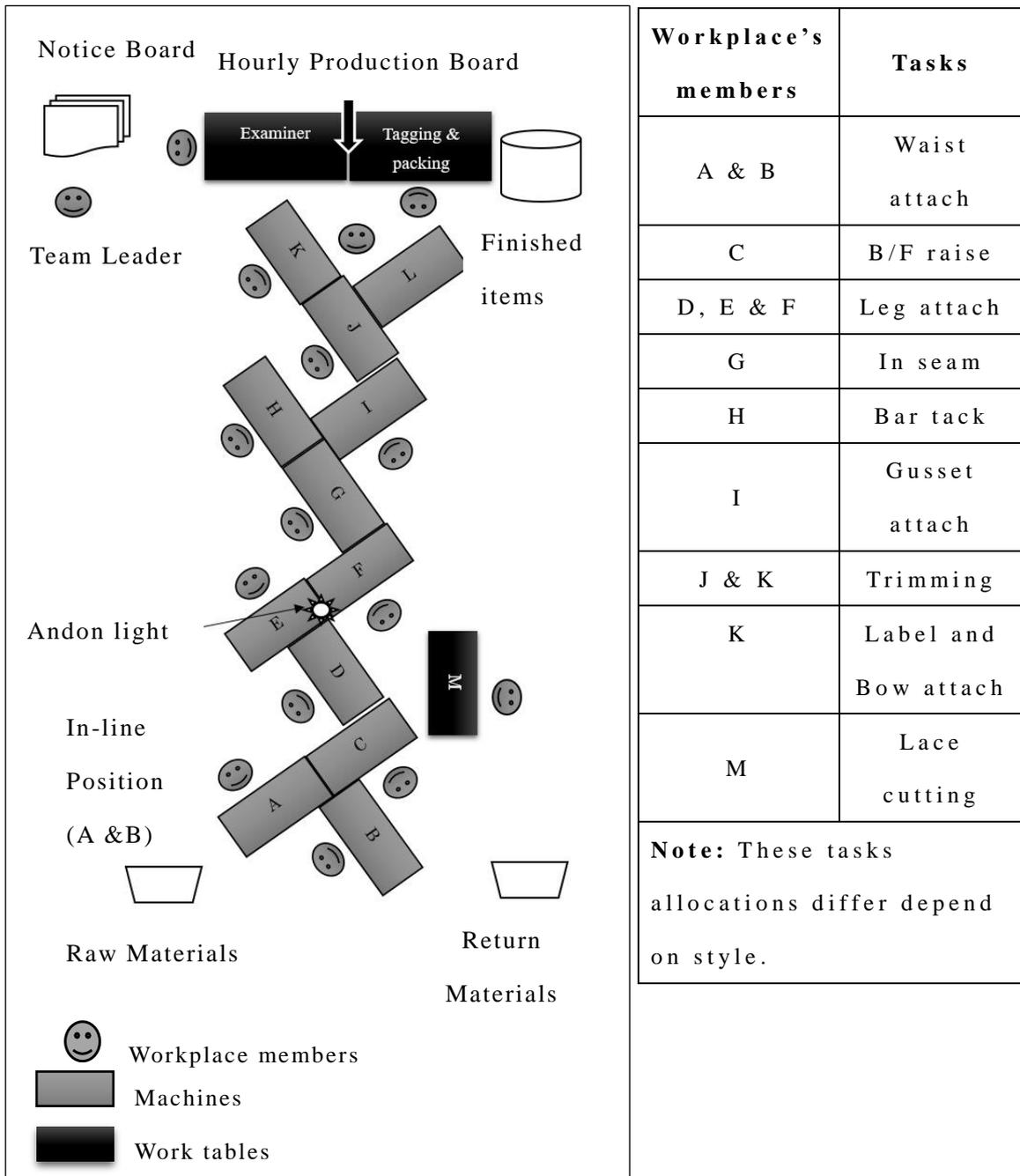
Firstly, the work-flow of factory X is outlined. The production workplace is producing “Wicked Rose lady’s panties” for Victoria’s Secrets. Their target is 130 units per hour. According to the production flow chart (see Appendix 6), sawing, tagging, quality checking (all items), packing and repair/alterations are being handled by the production workplace. All raw materials are brought by the supplying department staff. Work-flow has been arranged based on the zig zag style (Figure 9). Garments parts are moved in sequence from one worker to the next. Each worker receives an unfinished garments and fulfils operation(s) on each garment. This is called the single-piece flow<sup>11</sup> of work. For instance, worker A and B start the work process by doing part of the item (waist attach) and they turn to C to complete the next segmented part of the work (B/F raise).

Like this, the production item is completed partially by members of the workplace. After the end of the production work the item is assigned to the examiner. The examiner checks whether all items match or not with the recommended quality and measurements. If there is any fault, the examiner informs the relevant member about what was done. Finally, qualified items are transferred to member “O” to attach a price tag and other information tags and a packing task. Member “M” is doing a lace cutting task for members “A to F”.

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<sup>11</sup> Single-piece flow means that parts of a product is moved through operations from step to step in between workers (Satoglu et al., 2010).

**Figure 9 Work-flow of the Production Workplace of Factory X**



**Source:** Prepared on the Interview- based investigation

The team leader basically does documentation, supervising and supporting work for her members who did not reach their targets. She has to maintain an hourly production board and notice board. In this workplace, one member was 2 hours late from the starting time of the shift due to for lactating her child. Until the lactating mother begins work, the team leader and other members cover her

workload. Two meetings are held per day: before starting the daily work and after a tea break, and the “Five Whys<sup>12</sup>” method is used to solve a problem. If any machine breakdown has occurred in the production process, a member informs a mechanic by using the “ANDON<sup>13</sup>” system.

Then, the work-flow of factory Y can be presented as follows. Factory Y’s production flow chart is very similar to factory X, however, factory Y’s division of tasks is wider than X. The production workplace is producing printed chiffon blouses for a Switzerland buyer. Their production target is more than 950 items per day and the production work-flow has been depicted in figure 10. In the workplace, the progressive bundle system<sup>14</sup> is used. Here, bundles of garments parts are moved in sequence from one worker to the next. Each worker receives a bundle of unfinished garments and fulfils a single operation on each garment of the bundle. After finishing his/her work on a bundle it is passed on to the next operator. Practically, Helper 1 (H1) takes a bundle of cloth from a material rack which was prepared to saw by the cutting department and starts some marking task. Then, she delivers the marked bundle to helper 2 (H2) to perform some cutting. After that, the cloth bundle is supplied to the in-line machine operator.

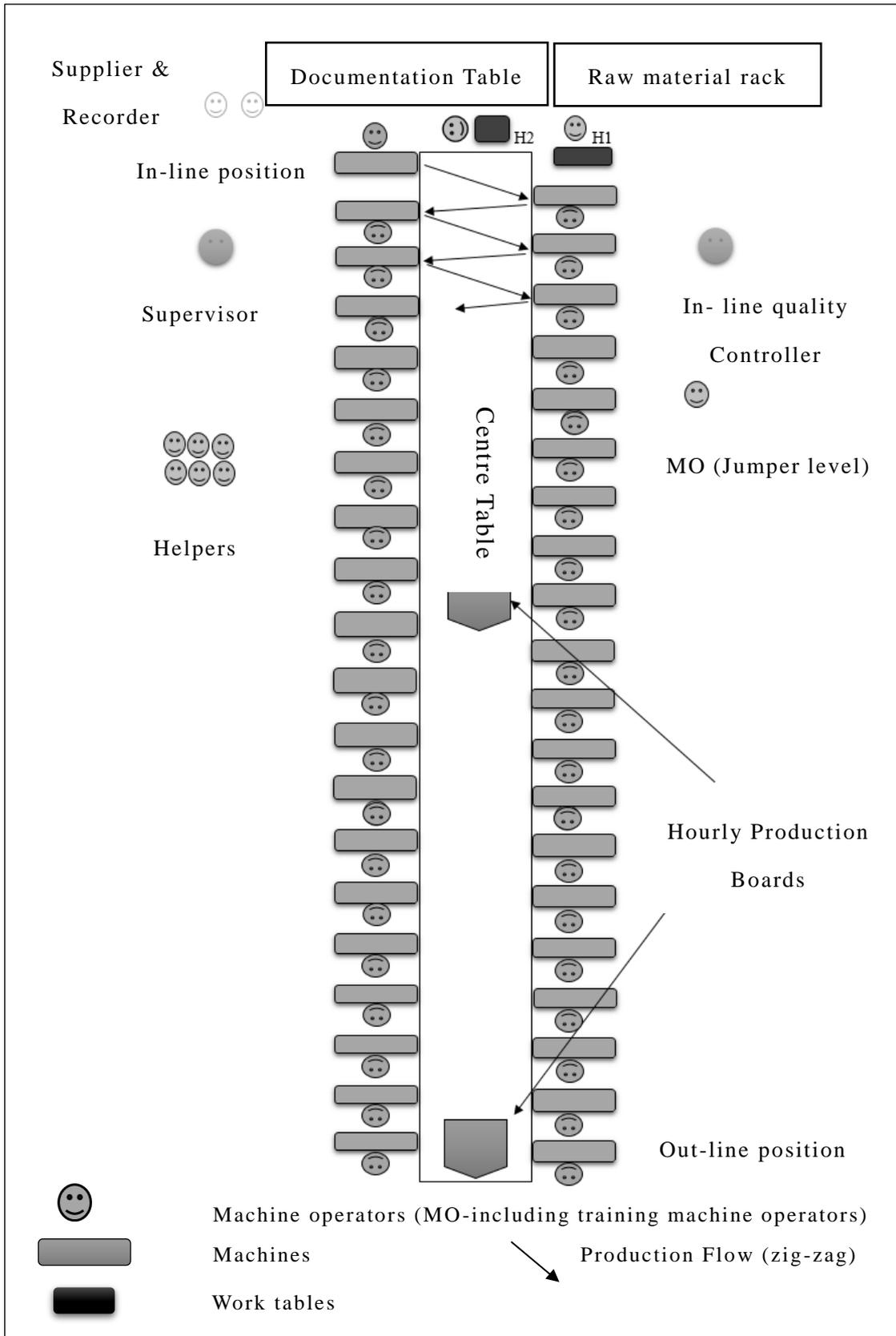
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<sup>12</sup> Five Whys analysis is a problem solving method. Basically, this technique is used by a lean production team (Serrat, 2017). Five whys analysis can be introduced as follows: “Five is a good rule of thumb. By asking ‘why’ five times, one can usually peel away the layers of symptoms of a problem. But one may also find one needs to ask ‘why’ fewer times or conversely more” (*Ibid*, p.308).

<sup>13</sup> ANDON- “A warning device, normally a light, to signal an abnormality, it is a part of the system of transparency” (Wilson, 2010, p.301) and that allows operators to identify problems in the production line with only a glance.

<sup>14</sup> The progressive bundle system is a system traditionally employed in apparel production where the task of assembling the garment is broken down into small operations, and bundles of work are progressed down the production line through each operation in sequence until the assembly process is complete (<http://www.textilesintelligence.com/glo/index.cfm>).

**Figure 10 Work-flow of the Production Workplace of Factory Y**



**Source:** Prepared on Interview- based investigation.

The machine operator and training machine operators start the attachment of the side seam and after the task was performed the bundle is transferred to the next person by using a “zig zag” style. The final stage of the production process is button attachment which is completed by the end-line position workers. Then, those completed items are assigned to the quality control department. Marking, lace cutting, trimming and providing the assistances to repair some disqualified items are done by other helping staff members.

There are not any daily meetings at the workplace in factory Y to inform and discuss prevailing issues or progress of the production process, as is done in factory X. However, a production executive calls ad-hoc basis meetings to provide information to the workers.

### **5.3.5 Organizational Structure**

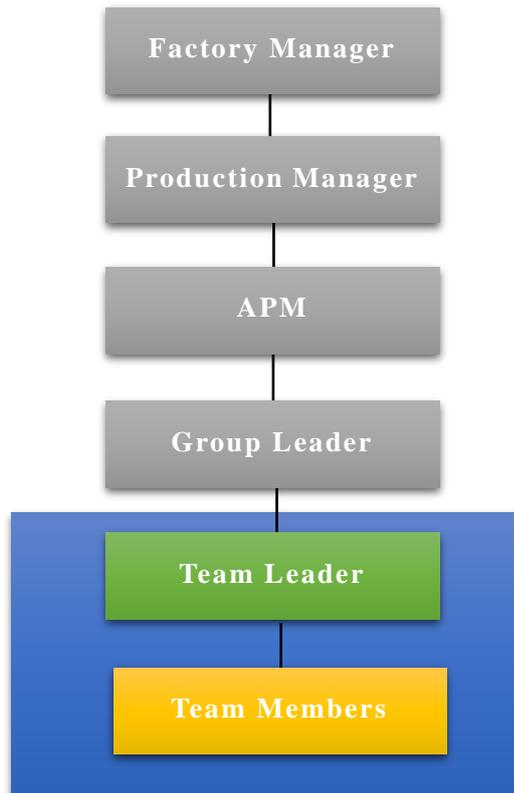
As an organization, factory X consists of departments like production, quality control, planning (technical), finance, merchandise, human resource, training and development, maintenance, and security. However, the investigation is carried out only about the production workplaces in the study. According to the information which was provided by the HR manager, the organizational structure of the production floor can be shown as follow.

The production floor consists of the following positions (Figure 11). The ash colour presents the white-collar level employees and shop-floor level workers who belong to the production workplace which was observed are represented by the blue colour area. Team members who have been illustrated by the light orange, get commands only from the team leader, basically.

The factory manager is liable for company management and the production manager takes all responsibilities regarding production. Basically, the production manager has responsibilities for about 36 production workplaces per shift. There are 2 assistance production managers (APM) and 4 group leaders for four production groups: A, B, C and D, per shift. One group leader provides instructions to 9 workplaces. A team leader is selected from team members. The

production workplace consists of 16 members, averagely, and they fulfil all tasks from production to packing. However, other jobs such as in-line quality control (random quality checking), mechanics, technical work and material supply are being done by the separate departments.

**Figure 11 Organizational Structure of the Production Floor (factory X)**

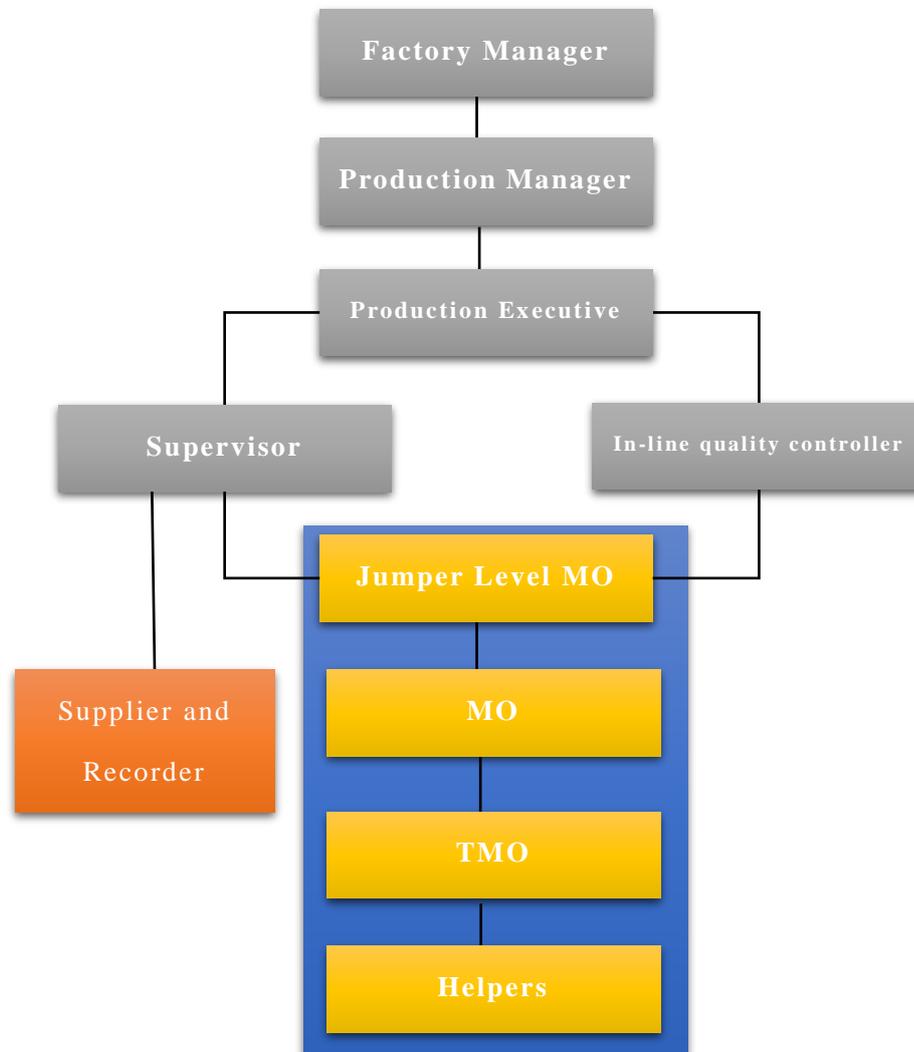


**Source:** Prepared on Interview- Based Investigation.

The production floor of factory Y consists of the following positions (Figure 12). The ash colour represents the managerial level and the light orange colour indicates the shop-floor level employees (machine operators-MO, training machine operators-TMO, and helpers) who performed the production task. The blue colour area illustrates workers who get commands from the supervisor and the in-line quality controller. Occasionally, the machine operator who is in the jumper level also provides instructions to the other machine operators and helpers. The orange colour indicates the supplier and recorder who accounts for the supervisor, directly. Frequently, a production executive also provides commands

to the shop-floor level workers.

**Figure 12 Organizational Structure of the Production Floor (factory Y)**



**Source:** Prepared on Interview- Based Investigation.

Responsibilities of the factory manager and production manager are similar to factory X. However, there are 4 production executives, 12 supervisors and 12 in-line quality controllers in factory Y. A production executive is managing 3 production workplaces. A supervisor in-charge is the leader of one production workplace and is a person who was promoted from the jumper level machine operator, more than 2 years previously. Her span of control is 52 workers (45 machine operators and training machine operators and 7 helpers). The in-line

quality controller is also a managerial level worker who provides instructions and commands, in particular, regarding the quality related matters to the workers. A jumper level machine operator supports the supervisor and occasionally, provides instruction to other workers. Further, from time to time, she is replaced to cover the absentees' workload and performs repair and alteration tasks, also. Suppliers and recorders are recruited only to accomplish all documentation and material supply. Supplementary jobs are carried out by helpers. Quality checking, packing, technical work and mechanic work are carried out by the separated divisions.

#### **5.4 Results of Qualitative Data Analysis**

In this section, information which was gathered through the interviews and production floor observations in two garment manufacturing organizations (factory X and Y) in Sri Lanka is presented, on focusing team characteristics: multi-skills, a common goal, task interdependence, team autonomy and mutual support. Moreover, the above mentioned information, in particular HRM related, is used to explore each characteristic of team and employees' voices. In other words, some discussions are handled regarding team characteristics which is helpful for the main empirical research of the study that is, quantitative research.

##### *Multi-skills*

In factory X, most of the workers can be identified as multi-skilled workers. And, the factory has also provided facilities to expand employees' competencies.

In the factory, skills which are needed to carry out sawing, quality checking (all garments), repair and alteration, tagging and packing tasks have been categorized as the technical skills. Practically, the multi-skills development chart (see Appendix 7) provides substantial evidences about the factory workers' multi-skills capabilities. According to the MSD chart, most of the workers can perform various kinds of technical tasks safely, with recommended quality, within cycle time and without supervision.

Also, survey results which were gathered on interviews with the employees

provide the supportive information about the multi-skills capability of employees. For instance, when asked about the number of work task she can perform, a person who is doing the tagging and packing task (team member-TM1x) can also do lace cutting tasks, and TM2x can do lace cutting and heat sealing. Further, another team member who is performing the label attachment and bow attachment ZZ tasks said that,

*I can perform in-line machine use such as lace attachment to legs and waist other than what I am doing now (TM 3x).*

Next, how to cover the absentees' workload was asked. According to the team leader and the company records there is no severe problem with absenteeism. But, there is a pregnant machine operator and a lactating mother. The pregnant machine operator most probably takes leave (leave limitation which is applicable to the team is not relevant for the pregnant woman). The lactating mother begins 2 hours later than the normal starting time of the working shift. Under these situations, team members cover their workload whenever necessary (TM1x, TM2x and team leader). It means that members have knowledge regarding others' work tasks in addition to their own job.

The author also had a chance to observe the team meeting and team members' participation in problem solving tasks. They actively participated in problem solving. There were some helpful criticisms at the workplace meeting. As well, in the team, responsibilities are taken by all team members. For instance, in the final 30 minutes of the working shift, other members of the team also participate in the quality checking, tagging and packing tasks. However, TM1x and TM4x are responsible persons for those tasks. A person who is responsible for production quality says, "*I trust my colleague because all members take responsibility on their tasks*" (TM4x). Further, work related information was shared, actively. Especially, it was able to be seen among the quality checker and machine operator, the team leader and machine operator, and within the nearest machine operator. Moreover, there are collaborative problem solving methods such as the five whys

technique, as mentioned earlier. Accordingly, those things represent the worker's multi-skills capacity, clearly.

However, in factory Y, it is arguable to say that there are many multi-skilled workers and have substantial facilities to train and develop existing employees' knowledge and skills. However, according to the interviewee's answers, MO1y (machine operator-MO) and MO2y can handle each machine in the production line. But, MO3y cannot handle any machine and MO4y can operate only the over lock machine. MO1y has learnt how to operate other machines, when she was replaced for the absent worker during her 6 year working period. Further, she said that supervisors provide instruction on how to operate the machine which she relocated to. And MO2y has got training in tailoring from a vocational training centre. Some employees have to cover the absentees' work load, very often, in another production line. It is emphasized by MO1y as:

*When someone is absent from his or her work, a substitute worker is selected from the CPU or another production line (MO1y).*

Workers are doing one task during almost all working hours. It means that repetitive work practices are common in factory Y. For example, MO1y has been doing a side seam job for a long time, MO3y has been working only as an iron worker for 4 years until transferred to the workplace and a button attach worker has been doing that task since 3 months ago.

And, risk taking, helpful criticism and active listening cannot be seen from this production workplace. There are no rooms to share information regarding the work process and tasks in the workplace meeting or during the operation. The meetings are called by the production executive or supervisor when a quality problem occurs or a design is going to change. Employees do not participate in the meetings actively and have not opportunity to present their ideas. Typically,

*I have not a chance to talk at the line meeting (TM4y).*

*Sometimes I don't know what they talked about at the meeting (TM5y).*

As it has been observed, practically, only the production executive talked at the meeting. There are not any collaborative problem solving methods and the management finds the solution for all issues.

#### *Common goal*

Based on the information which was obtained through the observation and interview with the managerial level workers relating to the goal setting and reward system, both organizations have set a goal for each workplace which should be achieved, collectively. Practically, workplaces which were observed in the qualitative study have a production target. Workers have to accomplish this target, collectively. This can be understood by using incentive payments on target achievements in factory X (see Appendix 5) because production incentives and bonuses are similar for each worker (except a person who is late due to lactating). However, in addition to a common goal, factory Y has assigned an individual goal to each worker.

#### *Task interdependence*

When we consider the work-flows of factory X and Y (Figure 9 and 10), workers in the both factories have to depend on other workers to fulfil his or her work task, practically, and very often employees complete a part of any production item. For instance, in factory X, workers A and B start the work process by doing part of the item (waist attach) and they turn to C to complete the next segmented part of the work (B/F raise). Accordingly, worker C has to depend on workers A and B.

#### *Team autonomy*

In factory X, according to the group leader (leader of the group which the observed workplace belongs), team members have been assigned some authority to make decisions on their work area. Especially, according to the group leader, they have authority to make decisions regarding starting time of the work, work methods and procedures, attendance and absent control, improving work process

and quality assurance, in partly.

However, practically, there are limitations regarding the decision making power. For instance, in relation to the work methods and procedures, the work method has been decided as the zig- zag style layout without a centre table by the management. As well, the machine set up is performed by the managerial level employees and mechanic workers (TM2x). Accordingly, managerial level intervention is very high regarding work methods and procedures like this.

*Our team's working methods and production targets are decided by management and the team leader informs us about those decisions at the team meeting (TM1x).*

However, they show some freedom on assignment of work among members and job rotation. It was possible to observe that some members exchanged their work position without the intervention of the managerial level. As well, they can rotate their members in the team, occasionally. For example,

*Sometimes we can change our work position in the team. Last week I worked at the in-line position (TM3x).*

As well, they can make decisions on the attendance and absenteeism control. According to company records there is a very low rate of absenteeism. However, there are some special circumstances in the team. The team leader said that,

*Always we try to balance our line by ourselves. One team member begins work later than the normal starting time due to breast feeding her child and we have to cover her workload for 2 hours. Another member who has gotten pregnant takes leave occasionally. In this situation, I can replace my team members as I want (Team leader).*

There is not any directly reporting in-line quality controller in the workplace but quality department workers check the production quality, randomly. Mainly, production quality checking tasks are also performed by the team members.

Particularly, the examiner is the responsible person for all quality controls in the team. However, all members check their items while in the production process. Typically, they check production qualities as 1 for every 5 items (TM1x).

Further, they have a chance to participate in decision making on the production process improvements. This is because, they gather two times per day compulsorily to discuss the members' work situations. If there is any problem, they find out solutions based on the "Five whys" method before they inform the managerial levels (Team leader). Management does not intervene to solve problems, basically. As observed, nearly all members participate actively in the meetings and they talked about some quality problems and target completion problems.

Selection of team members is a duty of the HRM division and existing team members have not a chance to select their members. But, they have an opportunity to present their opinion on selection of team leader:

In the selection process of a team leader, management discusses with us his or her suitability for leader position (TM4x).

Accordingly, some interviewees presented their ideas in favour with the team autonomy. But, only based on those statements and observations, it is arguable to conclude that they are able to decide all their tasks independently as a team. This is because, some decisions like work methods and procedures and selection of team members are taken in the standardized manner by the management. However, according to the survey results, it can be concluded that comparatively team autonomy exists to some extent in factory X, because factory X has created a favourable environment to cultivate team autonomy partly, as follows.

Organizational hierarchy of the production flow provides positive stimulation to cultivate team autonomy. A few years ago, the factory had the supervisory position to handle each workplace. However, after the new operation system, which is based on TPS, was introduced, the supervisory position has been diminished from each production workplace. Responsibilities which belonged to the supervisor

have been transferred to the team leader. The team leader is a blue-collar level worker who works with other shop-floor workers and takes responsibilities and is the main instructions provider of the workplace.

Similarly, freedom to participate in the decision making process regarding work methods and procedures, attendance and absenteeism control, improved work process, quality assurance and selection of team member is asked from the employees in the production workplace of factory Y. However, any encouraging statement or observation regarding the team autonomy was unable to be disclosed.

All work methods and procedures are arranged by the management (MO1<sub>y</sub>). They have been using a zig-zag style layout with a centre table as a production floor arrangement. All attendance and absences are controlled by the managerial level employees such as the supervisor and production executive. If any worker is absent from his or her work, they replace another worker from another workplace or CPU. Accordingly, it is impossible to say that the line balancing task happens with the participation of team members. Quality assurance is the sole duty of the in-line quality controller of the production workplace. All intra-team problems are solved by the managerial level employees because, there are not any compulsory team meetings during the work:

*We have not daily meetings. But when the new garment style starts, they organize a line meeting and explain how to do it, what is the targeted quantity and time duration. We have not a chance to present our ideas at the meeting. Our sir (production executive) and supervisor talk the whole time of the meetings (MO2<sub>y</sub>).*

Accordingly in factory Y, all decisions are taken by the managerial level employees. The shop floor level employees have not any chance to participate in the decision making process. They are only doing the production task in accordance with the managerial command.

In fact, in terms of the team autonomy in factory Y, it was impossible to find out any favourable factors. Main causes can be found from the organizational structure

of the production floor because the chain of command is too long and a complicated one. This long hierarchical organizational structure presents some traditional organizational characteristics: the management makes all decisions regarding the daily work and controlling power is centralized at the white-collar level. Particularly, a supervisor and in-line quality controller who belong to the white-collar level control the workers, directly.

### *Mutual Support*

In factory X, supportive work practices can be seen from the selected team. According to survey results, all interviewees provided a positive image and impression regarding their members' support. The following will give definite evidence for those assistances. A quality checker (TM4x) emphasised that,

*The team leader and in-line position members support me to complete tasks on time (TM4x).*

As well, the team leader expressed that her members help to balance the production workplace (line-balancing) when someone got absent from her work. As noted a few times in this chapter, there is a pregnant woman and a lactating woman who starts works two hours later than others. In this situation, other members cover their work load also. Typically, it could be observed in the production process that the team leader, TM1x and TM2x cover the work load of them. There were 2 members who have work experience less than one year. The person who has 3 months of work experience is doing leg attachment and her production capacity and speed was far less than other members who are doing the same task. However, there was not any argument between them. Sometimes 2 other members share the newly appointed worker's workload also (see Appendix 8). It could be realized through their work practices. Also, an incentives payment sheet (see Appendix 5) proves those supportive activities because, all team members' incentive amounts are similar except the employee who is late. Further, factory X calculates the team basis incentives rather than the individual basis.

Next, the question is asked about the sharing of information and knowledge which are relating to the task of the workplace. They are practising some developmental communication with each other. As well, they have a clear idea about the importance of other assistance and exchange the work related information within the production process. For instance, the team leader and the examiner discuss quality problems with a person who performs that task and teaches what they know. It represents the collaborative problem solving task purely.

However, in factory Y, it is very difficult to say that there are supportive working practices because interviewees did not express their ideas positively regarding the voluntary support from others. However, those expressions do not mean that members dislike supporting each other. Some members said that they have not a chance to support other members. MO1y, MO2y and MO5y emphasize the point as follows.

*I want to support my friends. But I have not time to do it. The time is not enough to complete my workload. I am working under a lot of pressure because I have to complete my work quantity very fast. If not the next person will have to wait for work and it will affect her incentives. As well, I have to repair some damages, also. That's why time is not enough (MO1y).*

*I finished my work on time and have not time to support any one (MO2y).*

*I have not time even to stand from this seat. I am working in the end-line position. I have to transfer product to the quality checking table (MO5y).*

According to the above expressions, allocation of workload is under a problematic situation in factory Y. As a result of that, workers have to fulfil a high workload. It would be a restriction for the mutual support practises among workers. As well, MO3y and MO4y have not an idea and knowledge about how to provide assistance. It means that there is no favourable environment to create mutual support practices among production workers. In the factory, most of the physical

assistances are provided by the helper grade employees. When someone is absent from his or her work, the production line is balanced by the management replacing TMO or MO from the CPU or another line (MO5y). The incentive system is also very complex in this factory. Incentives are paid on both a collective and individual basis. However, it is difficult to gain collective incentive. Typically, their daily absenteeism is very high (see Appendix 9) and it reaches nearly 8 per cent per day. This percentage is slightly high in this sector, 7 per cent per annum (Ruwanpura, 2012) however, prevailing high absenteeism is common in the garment sector (Piyasena & Kottawatta, 2015). Therefore, the factory transfers their workers here and there, to overcome the effect from the absenteeism and is unable to maintain fixed workers in a workplace. As a result of that, individual incentives are aimed for rather than collective ones by the workers. These practises may also adversely affect the mutual support.

Not only is the high workload and incentive payment system a problem but management practices are also another hindrance to build supportive work practices in factory Y. For example, MO4y expresses that,

*When any problems arise regarding my work, sometimes I discuss them with members who are close to me. But our supervisor misunderstands that we are going to neglect work. And then she gets angry with us (MO4y).*

It proves that there are communication barriers among workers. These adverse practices would affect sharing knowledge assistance among the employees. Furthermore, it was observed that the arrangement of the production process (Figure 10) also created the disturbance for effective communication. They have lined up in a similar direction. Another thing is that they have arranged their production line based on a zig-zag layout with a centre table. This kind of layout creates barriers to workers' movements (Lanarolle & Rathnayake, 2014).

## **5.5 Nature of Team Characteristics**

In this section, qualitative evidences which are helpful to reveal the team characteristics of the manufacturing organizations in Sri Lanka which say they have been practicing teamwork in the production process are pointed out. Based on the qualitative findings, the nature of the team characteristics can be discussed as follows.

It was found that workers in factory X have multi-skills capabilities as is a characteristic of team (Morita, 2014; Gallie et al., 2012). The informants provided supportive evidences to prove the existence of multi-skills. Furthermore, a well-established multi-skills development programme which is carried out on the in-site training centre (Greenwood & Randle, 2007) is called the MSD unit and provides facilities to expand the competencies of employees. Also, there is a common goal (Morita, 2008; Katzenbach & Smith, 1995; Mueller, 1994; Orsburn et al., 1990; Trist et al., 1987) which should be achieved collectively by each workplace. That is, a daily target can be considered as a common goal. Goal setting and the reward system, in particular, the calculation of incentives, explain the existence of a common goal, objectively. As well, objective task interdependence (Suzuki, 2013; 2011) can be seen in the production workplace of factory X. Practically, when we consider the work-flow, a worker has to depend on another to fulfil her task(s) on the production process. Team autonomy is another characteristic of team (Morita, 2014; Nijholt & Benders, 2010; Greenwood & Randle, 2007) which classifies the typology of team (Lapointe & Cucumel, 2016). In factory X, although the group leader said that each workplace has authority to make decisions on the starting time of work, work pace, work methods and procedures, and improvement of work process, survey findings prove that decisions are made by the management regarding them, practically. However, to some extent the organization has enhanced the employee participation in decision making (Gómez-Ruiz & Rodríguez-Rivero, 2018) such as selection of team leader, although the final decision is made by the management. Also, survey finding confirmed that the workers can transfer the members within the workplace to deal

with absenteeism. And when we consider the organizational structure, it can be understood that factory X has an idea about the employees' empowerment (Hanaysha, 2016; Sagie & Koslowsky, 2000) because, the supervisory level has been abolished. Regarding mutual support as a working level characteristic of team (Gallie et al., 2012; Morita, 2008), there is supportive evidence in factory X to prove the existence of mutual support. Tangible assistances such as physical and information related assistances (Shin et al., 2018; Fenlason & Beehr, 1994) can be seen in factory X.

Contrastively, the situation of factory Y is somewhat different rather than that in factory X, in particular, regarding multi-skills, team autonomy and mutual support. There was not any proof to explain multi-skills capabilities of employees on the production workplace. Even though some of the workers (MO1y and MO2y) said that they can handle more tasks, as a whole there is not any well-established training program for the existing workers to obtain additional skills. However, further research is needed to be explored regarding the informal training (Sakamoto, 2018; Sato, 2016; Dore & Sako, 1998) because, workers are replaced to cover the absenteeism and the managerial level workers provide instructions to them as needed. As well, when we consider the decision making of factory Y, it seems like a conventional organization because, decision making power has been centralized to the white-collar level employees as it was in a traditional work organization (Bratton & Gold, 2017; Levi 2011). Management intervention is high in the work process. All problems are tackled by the management. Management makes the decisions on work methods and procedures, recovering absenteeism, and improving the work process. Also, employees' participation in the decision making which was even in the group-based work organization (Likert, 1965; 1961) was very poor. Accordingly, in fact, these findings confirm the previous discussions (Vidyarathne et al., 2017; Jayawardana et al., 2013; Wickramasinghe, 2011; Kumarasinghe & Hoshino, 2010; Chandrakumara & Badhwar, 2005; Chandrakumara & Sparrow, 2004) regarding the management practices of work organizations in Sri Lanka. Moreover, even if employees want to support other

workers, the supervisor's managing style creates the main barriers to provide the supportive action. Therefore, mutual support does not take place in factory Y. However, regarding the common goal and task interdependence, the nature of them are to some extent similar to that which is in factory X because the production workplace has a target which should be achieved collectively and arrangement of work-flow shows the objective task interdependence (Kumar et al., 2009; Morgeson & Humphrey, 2008; Hertel et al., 2004).

Therefore, at the one end, factory X has provided some evidences to conclude that there are team characteristics such as employees' multi-skills capabilities, the existence of a common goal, objective task interdependence and mutual support in their work process. Therefore, the workplace in factory X can be introduced as a supervised team because the existence of autonomous work is arguable (Lapointe & Cucumel, 2016). And, at the other end, in factory Y, although goal setting and work-flow arrangement disclose the existence of a common goal which should be achieved collectively and objective task interdependence of the workplace, there are not substantial evidences to explain the existence of team characteristics such as employees' multi-skills capabilities, team autonomy and mutual support in their work process.

Accordingly, on the one hand, above practical evidences explain that, in the Sri Lankan context, there would be organizations such as factory X in which exist the characteristics of team. In other words, these facts explain the nature of team in work organizations in Sri Lanka. However, mere existence of team characteristics do not explain teamwork in a work organization because team and teamwork are different (Morita, 2014; 2008; Katzenbach & Smith, 1995), and understanding about the nature of team is important to make a conclusion about the teamwork because, as the study has explained previously, how worker's level characteristics: having multi-skill capabilities, having perception of common goal and task interdependence and having team autonomy, effect the working level characteristic: supporting one another, is discussed as a mechanism of teamwork.

However, although factory X provided substantial evidence for their nature of

team rather than factory Y, it is difficult to make a conclusion regarding whether the existence of teamwork which is questioned in the current study because, by using these evidences, methodologically, it is unable to confirm any teamwork model which was developed in chapter two. Also, these evidences were gathered through the small number of workers, typically five workers in a team of factory X. Therefore, these evidences encourage further study, in particular, a quantitative survey which uses a representative size of sample to find out a sound answer regarding whether there is teamwork in the Sri Lankan context.

Also, in factory X, it is typically realized that the employees have skills to perform additional tasks, they cover the absentees' workload and they are practicing mutual support. Meanwhile, a common goal and task interdependence are evaluated, objectively. This can be considered as a limitation of the qualitative study because, as reported by Suzuki (2013), employee's perception regarding their goal and task interdependence is important at the teamwork level. Therefore, further study is needed to be carried out for the evaluation of employee's perception on a common goal and task interdependence.

On the other hand, there would be organizations like factory Y which do not provide sound evidences to explain characteristics of team, while using the term 'teams' to introduce production workplaces and saying teamwork has been practiced in the production process. Thus, there would be organizations which have nominal teams.

## **5.6 Chapter Summary**

In the current study, the sequential triangulation (qual → QUAN) is used as the methodology. The chapter was arranged to reveal the results of the qualitative survey. The main purpose of the qualitative survey is to gather the information to organize a quantitative empirical survey regarding the manufacturing organizations in Sri Lanka. Particularly, the existence and the nature of characteristics of team and the management practices which are helpful to create a favourable environment to the team in the Sri Lankan context was taken into

consideration.

When we consider the manufacturing organizations which were the survey fields of the qualitative study, both organizations insisted that they are practicing teamwork in their production process. However, the evidences which are helpful to reveal the existence of the characteristics of team could be found only in the organization which has established TPS because employees who participated in the interview provided the explanations regarding their skills level and supportive activities and the observation and the interview with the managerial level workers provided the information regarding goal-setting, and work-flow arrangement and other management practices which can be seen in the team-based organizations. These findings were helpful to understand the nature of the team characteristics: multi-skills, common goal, task interdependence, team autonomy and mutual support, in the Sri Lankan context to create the questionnaire for quantitative survey.

Further, the findings revealed that there may be organizations in Sri Lanka which consist of the nominal teams such as the other organization which was selected for the qualitative study. Therefore, this suggests further research to clarify the situation in such an organization.

Accordingly, having this information, the quantitative survey was carried out expanding the sample size. The next chapter will report the findings of the quantitative study.

## **Chapter 6**

### **Organizational and Demographic Features, HRM Practices and Results of Quantitative Data Analyses of the Manufacturing Organizations in Sri Lanka**

#### **6.1 Introduction of the Chapter**

As mentioned in the methodology of the current study, mainly the qual → QUAN triangulation is used to collect the data to evaluate the existence of teamwork in the Sri Lankan context. The previous chapter presented the “qual” by carrying out interviews and observations. Therefore, this chapter is organized to present the findings on the quantitative research, that is, the QUAN. However, in addition to the main methodology, the QUAN + qual is also used to find out evidences which are helpful to the further clarification regarding quantitative analyses results. Hence, the beginning of this chapter is allocated to present those qualitative data, in particular, regarding the organizational background and HRM practices, which was gathered through the interview with the managerial workers in each survey field. Further, to reveal a clear picture about the organizations and sectors which were surveyed in the current study, demographic features are also presented with the organizational background. Then, results on statistical analyses: exploratory factor analysis (EFA), correlation values, regression analysis and path analysis, and supplementary analyses are presented.

#### **6.2 Organizational and Demographic Features**

In the quantitative survey, seven manufacturing organizations were selected as the sample and named as A to G. Factory A is a privatized porcelain manufacturing organization in Sri Lanka and represents the large proportion of porcelain production in the island. The organization produces wide varieties of porcelain productions for the foreign markets and the local market. Totally, more than 80 per cent of productions are exported to the foreign countries. In year 2000, team-based workings practices were introduced to the factory floor to tackle the

problems like lack of commitment and team spirit of employees and quality failures (Bodwell, 2005). There are three labour unions which belong to the major political parties of the country.

Demographic features of the factory are shown in Table 5. When we consider gender distribution of the workforce, the female and male proportion shows to some extent similar distribution and most of the workers are married (60.7 per cent). When consideration is put into the whole sample of factory A, the average age level is 31-35, however 44 per cent of the workers are below 30 years old. Further, average work experience of the production workers in the factory is more than 10 and less than or equal to 15 years and more than half the proportion of employees have more than a 10 year work experience (52.2 per cent) in the factory. Relating the education level of the workers, more than 50 per cent of workers have more than or equal to 13 years of school education<sup>15</sup>. Also, workers of the factory earn about USD 122 per month, averagely.

Factory B is also a privatized (in 1972) porcelain producer in Sri Lanka. The factory can be introduced as the oldest Japanese manufacturing organization in Sri Lanka. This Japanese subsidiary company produces a range of porcelain productions in line with factory A for the foreign and local market. According to the demographic data which has been exhibited in Table 5, more than three-fourths of production workers are women employees and 65 per cent of workers are married. The mean age level of the workers in factory B is 36-40. The workers have more than 10 but less than or equal to a 15 year work experience in the factory, averagely. Further, most of the workers have more than or equal to 13 years of school education (80.9 per cent) and the monthly average salary level of a worker is about USD 134.

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<sup>15</sup> In the level of education, less than 13 years of school education consists of less than G.C.E. O/L (General Certificate of Education- Ordinary Level) and followed G.C.E. O/L. More than or equal to 13 years of school education consists of followed G.C.E. A/L (General Certificate of Education- Advanced Level), passed G.C.E. A/L, following first degree and completed first degree.

**Table 5 Demographic and Organizational data ( each organization)**

Sectors	Porcelain Manufacturing Sector		Garments Manufacturing Sector				Transformer Manufacturing Sector
	A	B	C	D	E	F	G
Factories							
Distributed Questionnaires	203	210	200	78	152	117	150
n (Usable rate)	150 (74%)	178 (85%)	148 (74%)	57 (73%)	94 (62%)	92 (81%)	117 (78%)
Gender: Female (%)	48.7	76.4	88.5	78.9	87.2	91.6	63.2
Male (%)	49.3	22.5	5.4	14.0	6.4	5.3	35.0
Marital status: Single (%)	38.7	33.7	40.5	28.1	No Answer	40.0	50.4
Married (%)	60.7	65.2	56.8	71.9		53.7	42.7
Mean Age level	31-35	36-40	21-25	31-35	26-30	26-30	26-30
Mean Tenure years	More than 10 less than or equal 15	More than 10 less than or equal 15	Less than or equal 1	More than 5 less than or equal 10	More than 1 less than or equal 5	More than 5 less than or equal 10	More than 5 less than or equal 10
Level of Education (%)							
Less than 13 years School Education	36.7	16.3	60.8	83.7	70.2	54.9	9.4
More than or equal 13 years School Education	59.3	80.9	30.4	15.8	26.6	43.2	85.5
Salary Level : Mean (Rupees)	19260.78 <i>(USD121.83)</i>	21163.61 <i>(USD133.87)</i>	16817.16 <i>(USD106.38)</i>	15158.60 <i>(USD95.89)</i>	No Answer	22,269.41 <i>(USD140.86)</i>	30,398.30 <i>(USD192.28)</i>
S.D (Rupees)	4962.34 <i>(USD31.39)</i>	4942.70 <i>(USD31.26)</i>	1980.54 <i>(USD12.53)</i>	2164.66 <i>(USD13.69)</i>		3272.01 <i>(USD20.70)</i>	7725.25 <i>(USD48.87)</i>
(USD 1=158.09, CBSL, 2018.05.31)							
Number of Employees (Blue-collar)	892	850	396	105	450	1200	1320
Established year of Factory	1973	1984	2015	2000	2010	2004	2007
Nationality of Factory	Sri Lankan	Japanese	Indian	Sri Lankan	Sri Lankan	Sri Lankan	Norwegian

**Source:** Survey data.

Factory C is a garments manufacturing factory which is owned by an Indian. It was established in 2015 and except for the CEO post, all other management positions are handled by the Sri Lankans. In the production workforce, 88.5 per cent of workers are women and 56.8 per cent are married. Further, the mean age level of the workers is 21-25 and mean work experience is less than or equal to 1 year. As well, only about 30 per cent of workers have more than or equal to 13 years of school education and the average monthly salary is USD106.

Factory D is also a garments manufacturing factory which was established in the year 1999 with the initiation of a German based company. However, in 2008, the factory was taken over by a Sri Lankan, reducing production lines from 14 to 5. In the production workforce, most workers are women and married; percentages of them are 78.9 and 71.9, respectively. As well, the mean age level of the production workers is 31-35 and averagely, workers have more than 5 and less than or equal to 10 years work experience in the factory. Regarding the education level, more than three-fourths of workers have not more than or equal to 13 years

of school education and workers of the factory earn nearly USD 96 per month, averagely.

Factory E has also been producing garments for the world's leading brands. As a group, they have 5 production factories in Sri Lanka. In the workforce of the factory, nearly 90 per cent of employees are women and the mean age level is 26-30. Employees have more than 1 year and less than or equal to 5 years tenure in the factory, averagely. As in factory C and D, most of the production workers belong to the less than 13 years school education level. Unfortunately, the factory did not give permission to ask about the marital status and salary level.

Factory F is also a subsidiary of the Mother Company which belong to factory X that was surveyed in the qualitative study. The TPS has been used to arrange their operating system, too. In the production workforce, more than 90 per cent of workers are women, 53.7 per cent of workers are married and the average age level is 26-30. As well, the average work experience of the workers is more than 5 and less than or equal to 10 years and 43.2 per cents of workers have more than or equal to 13 years of school education. And, workers of the factory earn about USD 141 per month, averagely.

Factory G is a Norwegian affiliated organization which has been manufacturing transformers for industrial companies. They started the production in Sri Lanka in year 2007. Regarding gender and marital status, 63.2 per cent workers are women and 50.4 are unmarried. The mean age level of the workers in the factory is 26-30 and workers have more than 5 and less than or equal to 10 years work experience in the factory, averagely. As well, the factory have educated production workers in site because most of them have obtained more than or equal to 13 years of school education (85.5 per cent). The average monthly salary is about USD 192.

Until now, the organizational background and demographic features of each organization are outlined. Then, to understand the nature of the whole sample and sectors (porcelain, garment and transformer) which are used in the current study, demographic features (Table 6) are calculated regarding aggregated data sets, as a whole and sectors vice. In all the manufacturing organizations' samples, most of

the workers are women (74.9 per cent). Also, regarding the sectors, this trend prevails as the same, however, the percentage is higher in the garment sector (87.6 per cent) than the other two sectors. Although a majority of workers are single in the transformer sector, 55 per cent of workers are married in all the sample. The mean age level is 31-35 and this is similar with the mean age level of the porcelain sector sample. However, the garment and transformer sectors' mean age level is 26-30. When we consider the workers in all the organizations, average work experience is more than five and less than or equal to 10 years; in the garment sector, however, average work experience is lower than in other sectors.

**Table 6 Demographic data (as one sample and sectors)**

	All Manufacturing Organizations	Porcelain Manufacturing Sector	Garments Manufacturing Sector	Transformer Manufacturing Sector
n	839	328	394	117
Gender: Female (%)	74.9	63.7	87.6	63.2
Male (%)	21.7	34.8	6.9	35.0
Marital status: Single (%)	36.6	36.0	33.0	50.4
Married (%)	55.0 (Note 1)	63.1	51.8 (Note 1)	42.7
Mean Age level	31-35	31-35	26-30	26-30
Mean Tenure years	More than 5 less than or equal 10	More than 10 less than or equal 15	More than 1 less than or equal 5	More than 5 less than or equal 10
Level of Education (%)				
Less than 13 years School Education	41.1	25.6	63.5	9.4
More than or equal 13 years School Education	54.0	71.0	30.5	85.5
Salary Level : Mean (Rupees)	21072.42 (Note 1) (USD133.29)	20316.50 (USD128.51)	18218.12 (Note 1) (USD115.23)	30.398.30 (USD192.28)
S.D (Rupees)	6559.20 (USD41.49)	5033.13 (USD31.84)	3742.77 (USD23.67)	7725.25 (USD48.87)
(USD 1=158.09, CBSL, 2018.05.31)				

**Source:** Survey data.

**Note 1.** Marital status and salary level in all manufacturing organizations and garment sector were calculated excluding factory E which has not given the permission to collect those data.

Further, as a whole, 54 per cent of workers have more than or equal to 13 years school education and regarding the sectors, 63.5 per cent of the garment sector

workers have less than to 13 years of school education and conversely, a large number of workers in the porcelain and transformer sectors have more than or equal to 13 years of school education and they are 71 per cent and 85.5 per cent, respectively. Moreover, in the aggregated data set of all organizations, the average monthly salary is about USD 133 and comparatively, the average monthly salary is higher in the transformer sector than in other sectors.

### **6.3 HRM Practices**

As discussed in chapter three, HRM practices are helpful to understand the nature of a team-based work organization. Therefore, information regarding HRM practices of each organization was collected by handling interviews with the managerial level workers of each organization. HRM practices of each surveyed organization are shown based on the following five elements, because they are considered as the antecedents of workers' level characteristics of team.

- Employees' training and development
- Goal setting
- Rewards system
- Work design
- Organizational structure design

#### **6.3.1 Employees' Training and Development**

In factory A, people are recruited to the departments which have job vacancies, for instance the decoration department recruits employees who have decoration skills. These newly entered workers are identified as the trainee production workers. Trainee production workers have to get training under the line supervisors and production executives. Thus, as a training and development method, the organization provides 3 months of on-the-job training (OJT). Job rotations do not take place and according to the HR manager, creating specialised workers on each production task is the target of employees' training and development of the factory.

In factory B, there are two training programs for production workers, in which, newly entered workers are trained by the supervisors of the production line which he or she was assigned. There are three worker levels which have been classified on employees' skills, under this department based training. Those three levels are, "can do work with support of supervisor", "can do work on own with working standards" and "can teach".

Another one is the multi-skills development program which has been established under the "Monozukuri Concept" of the factory. According to the HR manager of factory B, the Monozukuri Concept is a program which considers cost reduction, improvement of safety and training of the employees. Every production department has to manage an Education and Training Skills Map to display employees' skills development. Under this multi-skills development program, they hope to train their workers on at least three processes of the production flow. The factory provides 6~12 months of training, based on the multi-skill development program. OJT is used as the main training method and job rotations take place continuously based on the training plan. Even newly recruited employees are also trained on OJT. Further, there is not only a production task related multi-skills development program but training on maintaining task training also. A few decades ago, a training program in the Mother Company in Japan had been arranged. However, due to an illegal stay problem, the training program was interrupted.

Training and development in factory C and E is similar to some extent. Factory C and E have established a training production line to give basic training to the newly recruited employees. However, the training line of factory C provides basic training within 15 days and then those training machine operators are assigned to the production workplaces which face labour shortage. Thereafter, the supervisor of each production workplace provides OJT to the newcomers. Meanwhile, factory D has not dedicated training facilities to workers and very often they recruit persons who have work experience in same industry and occasionally, supervisors of the production workplace provided the knowledge to the workers in an ad-hoc basis.

Factory F is a subsidiary of the Mother Company which belongs to factory X which was used to carry out the qualitative study. Therefore, training and development methods are similar with factory X because, a training school trains the newly recruited employees and the in-site training centre (MSD unit) develops the skills of the existing employees under the MSDP (see Appendix 4). However, employees who are in factory F have to gain knowledge about how to use some technological equipment such as tablets because, the Mother company has a policy to use technology as much as possible on the factory floors. For example, as can be seen in factory F, tablets have been provided to each production workplace and information is exchanged by using them. Further, tablets are used to fulfil a task which previously was performed by the “ANDON” system.

In factory G, there is not any systemized training program to expand the competencies of the existing employees and the organization welcomes the specialized workers to the production process. The factory has arranged a training section to provide knowledge about any job, for instance, winding transformer coils. Newcomers have to participate in a 3 months training program.

### **6.3.2 Goal Settings**

In factory A, each production workplace has a monthly production target to be accomplished collectively. This monthly target is determined by the production planning department. In factory B also, each and every production workplace has a production target which should be accomplished, collectively. These production targets are calculated by the production engineering department in the organization. A monthly production target is assigned to each production workplace by the working study department in factory G.

Contrastively, in the garment sector, goal setting is performed on a daily basis. In factory C, D and E, employees have a daily production target which should be achieved individually and collectively as a production workplace. And in factory F, each production workplace has only a target which should be accomplished, collectively. These daily-based production targets are calculated based on the

Standard Minute Value (SMV).

### 6.3.3 Reward System

In factory A, basic salary levels of production employees are decided based on the collective agreement between the organization and labour unions. As well, when determining the employees' basic payments, seniority and job grades are largely taken into consideration. In addition, the organization calculates production incentives based on the monthly target completion of a production workplace.

$$\text{Salary} = \text{Basic Salary} + \text{Production Incentive} + \text{Attendance Incentives}$$

The reward system of factory B is identical with factory A. Basic salary levels are decided based on the collective agreement between the organization and workers union. In factory B as well, production incentives are calculated on a collective- basis considering the monthly target completion of each workplace.

The rewards systems of factory C, D and E are identical and it can be reported as follows.

$$\text{Salary} = \text{Basic Salary} + \text{Production Incentive} + \text{Attendance Bonus} \\ + \text{Grading Bonus}$$

Both collective and individual performances are considered to determine the production incentives. And, factories C, D and E pay the bonus for worker's grade (C, B, A\*, A\*\*, A\*\*\* and super grade). These grades are decided considering the employee's work experience, contribution to the production and skills.

In factory F, salaries of the blue-collar workers of the production workplace are calculated as follows.

$$\text{Salary} = \text{Basic Salary} + [\text{Production Incentive} + \text{Bonus}] + \text{Attendance} \\ \text{Incentives}$$

There is individual difference regarding basic salary. However, the production incentives and bonus of the workers are calculated based on completion of target which is assigned to the workplace. When the workplace reaches or makes more than the production target, employees can earn the production incentive and bonus.

There is not an individual based incentive calculation as is in other garment factories (C, D and E).

The rewards systems of factory G can be reported as follows.

$$\text{Salary} = \text{Basic Salary} + \text{Production Incentive} + \text{Attendance Bonus}$$

There is an individual difference regarding basic salary. However, the production incentives and bonus of the workers are calculated based on the completion of target which is assigned to the workplace and an individual.

#### **6.3.4 Work Design (Production Process)**

As the porcelain production organizations, the production process of factory A and B (see Appendix 10) is often identical, as explained below.

In factory A, each work station of the production process (forming, white-ware reduction firing, white-ware oxidation firing, biscuit inspection, white-ware inspection, decoration, decoration inspection, etc.) fulfil the part of production. For example, in the glazing department, firstly, unloading the biscuit from the hearth kiln and then removing dust which is on the biscuit-ware by using a compressor. Next, the glazing task is performed and finally, glazed biscuits are loaded to carts for firing them. Out- puts of the glazing department, that is white-wares, are the in-puts of the white-ware inspection department. Some tasks in the production station have been arranged as a moving assembly line using a belt system. Particularly, when we consider the work design of the white-ware inspection, decoration and decoration inspection, employees have to depend on others to fulfil his or her job.

In factory B, each work station of the production process (moulding, white-ware, biscuit inspection, glazing, white-ware inspection, decoration, decoration inspection etc.) finishes the part of a product. Tasks of each production station have been arranged as a moving assembly line using a belt system. For example, in the biscuit inspection line, firstly, unloading the biscuits from the kiln are performed at the start point of the line. Then, an inspection task is carried out and finally, arrangements are made to transfer the product of the biscuit inspection

department to the glazing department. An out-put of the biscuit inspection becomes an in-put to the glazing department.

In the production process of factory C, D and E, a progressive bundle system can be seen. Here, bundles of clothes move from one machine operator to another machine operator. Workers in the production workplaces just fulfil the sawing tasks and quality checking, tag installing and packing tasks are performed by other separated departments in factory C, D and E. Meanwhile, the work design method of factory F is identical with factory X and sawing, quality checking and packing tasks are handled by each workplace. In the single- piece flow system, each worker fulfils a part of a piece of product and that piece is transferred to another to complete his or her part. In factory F, in addition to the Zig zag module (16 workers consist of the workplace and in the work process, one worker fulfils the one or two tasks and turns to another to do the next task, as it has been presented in Figure 8), they have introduced a new work module as the “Stand module” which consists of 7 multi-skilled workers and complete all the production tasks which are performed by 16 members in the Zig zag module. The Production workplaces which are based on the stand module have been arranged as a U-shape and employees can move freely from one operation to another as the garment progresses. Hence, transferring team members within the workplace happens automatically, as needed.

However, as a whole, it can be concluded that the production workers in each workplace of factory C, D, E and F have to depend on the other worker(s) in his or her workplace, although work flows under the progressive bundle system (C, D and E) or single-piece flow system. Therefore, in a workplace, an item is completed with the help of every member of the line.

The work-flow of factory G was unable to be observed during the survey period. According to the manager of personal and administration, in the production process, a production workplace assembles or produces a part of a product and the fulfilled part is transferred to another workplace. Therefore, a workplace has to depend on the other workplace. Employees of a workplace perform the same task,

for instance, the primary winding is fulfilled by a workplace.

### 6.3.5 Organizational Structure

According to the details of factory A, an organizational chart of the factory can be drawn as in Appendix 11. When the hierarchical structure of a production related task is considered, the general technical manager is at the top of the production section. He has eight immediate subordinates such as four senior managers and four production managers on production related tasks: white-ware firing, white ware making, decoration, planning, casting, printing and kiln. There are four production executives who have to report to senior managers. The production supervisor is in-charge of a production workplace and there are twenty six supervisors. However, there are three production workplaces which consist of two supervisors, and depends on the length of the line. A supervisor has to handle averagely 10-30 production workers of each workplace. Accordingly, the hierarchical chain of command from top to bottom regarding one production workplace, here about a decoration line, can be shown as follows.

*General Manager → Senior Manager (decoration ware department) →  
Production Executive (decoration ware department) → Supervisor  
(Decoration Line 1) → Production Workers (Decoration Line 1)*

The organizational chart of factory B has been exhibited in Appendix 12. The factory manager is the head of the production department. Senior managers of white-ware, decoration and production planning are the immediate subordinates of the factory manager. There are four production managers for preparation, forming, casting and moulding and white-ware oxidation firing under the senior managers of production department. In the next layer of the organizational chart, there are six assistant production managers who report to the production managers. These assistant production managers give commands to the supervisory level workers in each production workplace. Junior supervisors are the immediate subordinates of the supervisory level workers and immediate superiors of the

production workers. However, junior supervisory level workers are involved in the production activities with the production workers. Although command flow seems to be complex, in sum, the hierarchical chain of command from top to bottom of the production department can be summarized as follows.

*Factory Manager → Senior Manager → Production Manager → Assistant Production Manager (s) → Supervisor (s) → Junior Supervisor → Production Workers*

According to the organizational structure of factory C (see Appendix 13), hierarchies which related to the production department can be reported as,

*Factory Manager → Production Manager → Assistant Production Manager (APM) → Team Leader → Machine Operators → Helpers*

Relating the hierarchical chain of command, an APM has responsibilities on two production workplaces and has to provide instructions and commands to the team leader and workers there. The team leader is also a managerial level worker who performs as the supervisor of the workplace. In addition to the commands from the team leader, workers and helpers have to listen to the in-line quality assistant who checks the production quality of the ongoing process.

The organizational structure of factory D has been given in Appendix 14. In factory D, the organizational structure of the production floor can be presented as follows.

*Factory Manager → Production Manager → Supervisors → Machine Operators → Helpers*

Its nature is to some extent identical with factory C. However, comparatively as a small organization, they have abolished the APM level which can be seen in factory C. The production manager directly provides commands to the supervisory level workers who belong to the white-collar level. Supervisors are the responsible

people of each production workplace. The number of subordinates directly reporting to a supervisor is about 13-26. Meanwhile, an in-line quality controller also supervises and provides commands to the production workers and helpers.

The organizational structure of factory E has been shown in Appendix 15. The production floor's organizational structure of factory E can be reported as follows.

*Factory Manager → Production Manager → Supervisor → Leader → Seamstress  
→ Helpers*

Factory E has used different names to introduce managerial positions and workers. For instance, they have used the term 'supervisor' for an assistant production manager who is in factory C, 'leader' for supervisory level workers and 'seamstress' for machine operators. As a managerial level worker, the leader performs the supervisory task of the assigned production workplace and his or her span of control is 20 employees, averagely. Like other factories, the quality supervisor also provides instructions and commands to the workers, occasionally.

The organizational structure of the production floor in factory F is similar with factory X (Figure 9), because they are subsidiaries of the same mother company. Therefore, giving information on the organizational structure of factory F is omitted. However, the number of subordinates directly reporting to a team leader is 6 in the Stand module and about 15 in the Zig zag module. Meanwhile, it was unable to obtain information regarding whole organizational structure of factory F.

Detailed information about the organizational structure of the production floor in factory G was unable to be gathered. However, according to the manager of personal and administration, a production supervisor is the in-charge of a production workplace.

Accordingly, HRM practices in all surveyed manufacturing organizations can be summarized into Table 7.

**Table 7 HRM Practices of the Manufacturing Organization in Sri Lanka**

<b>Management Practices</b>	<b>Factory A</b>	<b>Factory B</b>	<b>Factory C</b>	<b>Factory D</b>	<b>Factory E</b>	<b>Factory F</b>	<b>Factory G</b>
Employees' Training and Development	-OJT is provided by supervisors of production lines. -Target is to develop specialized workers on specific task.	-For newcomers, supervisors of production lines provide OJT. -Multi-skills development section trains existing	-Training line provides training for newcomers. -In the production workplace, supervisory level worker provides trainings on new task (ad-hoc basis).	No training line or section. When it is needed, supervisory level worker of the production workplace provides trainings (ad-hoc basis).	Training line provides training for newcomers. When it is needed, supervisory level worker of the production workplace provides trainings (ad-hoc	-Training section provides training for new comers. -In-site training centre trains employees on different kinds of tasks based on the MSDP (Multi-skills	Training section provides training for new comers.

		employees on different tasks. -Job rotation.			basis).	Development Program).	
Goal Setting	Each workplace has a monthly target which should be achieved collectively.	Each workplace has a monthly target which should be achieved collectively.	Each workplace and worker has a daily target which should be accomplished collectively and individually.	Each workplace and worker has a daily target which should be accomplished collectively and individually.	Each workplace and worker has a daily target which should be accomplished collectively and individually.	Each workplace has a daily production target (a goal) which has to be fulfilled collectively.	Each workplace has a monthly target which should be achieved collectively and individually.
Rewards System	Production incentives are	Production incentives are	Production incentives are	Production incentives are	Production incentives are	Production incentives are	Production incentives are

	calculated based on the monthly target completion by a workplace, collectively.	calculated based on the monthly target completion by a workplace, collectively.	calculated based on the collective performance as well as individual performance.	calculated based on the collective performance as well as individual performance.	calculated based on the collective performance as well as individual performance.	calculated based on the collective performance.	calculated based on the collective performance as well as individual performance.
Work Design	-Moving assembly line with belt system. -Based on the work flow, each member of production workplace	-Moving assembly line with belt system. -Based on the work flow, each member of production workplace	- A worker of a production workplace has to depend on others to start or fulfil his or her task. -Progressive bundle	- A worker of a production workplace has to depend on others to start or fulfil his or her task. -Progressive bundle	- A worker of a production workplace has to depend on others to start or fulfil his or her task. -Progressive bundle	A worker of a production workplace has to depend on others to start or fulfil his or her task. -Single-	- A worker of a production workplace has not to depend on others to start or fulfil his or her task.

	has to depend on each other.	has to depend on each other.	system has been used.	system has been used.	system has been used.	piece flow.	
Organizational Structure	Hierarchical	Hierarchical	Hierarchical	Hierarchical	Hierarchical	Supervisory level has been abolished. Team leader is a blue-collar employee. Less hierarchical ( Lee & Edmondson, 2017)	-

**Note:** Information regarding the organizational structure of factory G was unable to be obtained.

## 6.4 Results of Quantitative Data Analyses

Results which were obtained through different kinds of statistical analysis are mentioned in this section. Firstly, results of factor analysis (Exploratory factor analysis- EFA) and reliabilities values of data are presented. Then, correlation values and regression analysis results are revealed. Next, an estimated teamwork model(s) is confirmed considering the causal relationships of team characteristics. Moreover, results of the supplementary analyses are also reported in this section.

In the quantitative survey, self-administered questionnaires were distributed (Mean values and standard deviations of each item has been given in Appendix 3). The usable response rates for distributed questionnaires in factories A to G were 74, 85, 74, 73, 62, 81 and 78 per cent, respectively. In sum, it was a 76 per cent average response for questionnaires. Each usable response rate is in or more than in an acceptable range of  $52.2 \pm 20.4$  that has been recommended by Baruch and Holton (2008) for organizational research that is based on the data which is collected from individuals.

Accordingly, data which was collected through the quantitative survey is analysed as follows.

### 6.4.1. Extraction of Team Characteristics

#### *Exploratory Factor Analysis (EFA)*

Firstly, Exploratory Factor Analysis (EFA) was performed by using Unweighted Least Squares extraction with Promax rotation through the SPSS FACTOR Analysis. Practically, before carry out the factor analysis, ceiling effect and floor effects are checked regarding the collected data and items which have exhibited ceiling effect or floor effect are left out from the factor analysis. However, Shimizu (2018) and Yoshida et al. (2012)<sup>16</sup> have insisted a contradictory point of

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<sup>16</sup> Yoshida et al. (2012, pp.214-215) have reported that "...if there is a certain amount of variation, content should be considered more importantly than the bias of the distribution". Furthermore, they have insisted that the procedure [when item's Mean value  $\pm$  Standard Deviation is beyond the acceptable range, the item is deleted pointing out there is a ceiling effect or floor

view regarding this exclusion. Therefore, data which was gathered by using 23 items to measure characteristics of team: multi-skills, common goal, task interdependence, team autonomy and mutual support, was used for the factor analysis, primarily. Factor analysis was carried out with an aggregated data set (data from all seven factories) and individual data sets of each organization. In the option of the factor analysis which relate to how coefficients are displayed, suppressed absolute values of less than 0.3 was set (Oda, 2014). In the first stage, however, it was unable to extract valid, useful and convincing factors. Therefore, again, Exploratory Factor Analysis (EFA) was performed by using Unweighted Least Squares extraction with Promax rotation through the SPSS FACTOR Analysis putting data which was gathered by using 17 items which were used to measure multi-skills, common goal, task interdependence and mutual support. That is, factor analysis was carried out excluding the items for team autonomy since the large number of items exhibited the floor effect- the lower ends of scores (mean value- standard deviation)<sup>17</sup> are below 1. Furthermore, items which had less communality values, in fact less than 0.3, were avoided from the factor analysis because they are less criterions than the usual 0.30 (Mohapatra & Murarka, 2016; Oda, 2014).

Based on factor analysis results, Kaiser-Mayer-Olkin (KMO value) measures of samples adequacy were between .802 and .692 regarding all factories (Table 8). These values determined factorability, since those exceed the minimum value of 0.5 (Field, 2013). The  $\chi^2$  test statics of Bartlett's tests of sphericity were significant at  $p < .001$  in each factory, which indicated that all correlations were significantly different from zero.

Rotated factors loadings (pattern matrix) and commonality values are given in Appendix 16-23. Patterns of factor loading in whole samples and each organization are shown in Table 8. The term "Yes" describes factor extraction regarding each manufacturing organization. Further, the percent of variance explained (PVE),

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effect] which is used to examine the ceiling effect and floor effect is not suitable.

<sup>17</sup> Mean values and standard deviations of the items have been reported in appendix 3.

cumulative percent of variance explained (CPVE) and reliability values in each factor are shown in Table 8. Factors in which the Eigen value is higher than 1.0 (Field, 2013) were extracted.

**Table 8 Results of EFA and Reliabilities**

	All	Sectors						
		Porcelain Manufacturing		Garments Manufacturing				Transformer Manufacturing
		A	B	C	D	E	F	G
n	839	150	178	148	57	94	95	117
<b>Mutual Support</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reliability	.72	.78	.69	.80	.78	.73	.75	.80
PVE	41.075	40.886	29.561	39.475	43.311	36.047	35.741	39.477
<b>Common Goal</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reliability	.68	.63	.72	.56	.65	.60	.53	.61
PVE	17.695	11.973	13.424	14.393	21.887	14.985	11.571	17.602
<b>Multi-Skills</b>			Yes				Yes	
Reliability			.54				.66	
PVE			10.020				13.830	
<b>Task Interdependence</b>		Yes	Yes	Yes		Yes		
Reliability		.60	.53	.52		.77		
PVE		13.745	9.065	11.128		20.572		
CPVE	58.769	66.604	62.710	64.996	65.198	71.604	61.142	57.080
KMO	.795	.802	.780	.786	.733	.692	.730	.783
Bartlett's Test	1223.1***	389.3***	440.2***	367.8***	113.6***	179.0***	229.9***	228.72***

**Note:** PVE-Percent of variance explained, CPVE- Cumulative Percent of Variance Explained, KMO- Kaiser-Mayer-Olkin. Reliability values represent the Cronbach alpha.

**Source:** Results of statistical analysis on the survey data.

In the situation of all combined data, that is, data from all seven organizations was aggregated, two factors could be extracted and altogether accounted for about 59 per cent of the variance in responses. Those are named as mutual support and common goal. Regarding factories A, C and E, three factors were extracted and altogether accounted for nearly 67, 65 and 72 per cent of the variance in responses, respectively. In A and C, factors 1 to 3 were labelled as mutual support, common goal and task interdependence. In E, factors 1 to 3 were labelled as mutual support, task interdependence and common goal. In factory B, four factors were extracted

and altogether accounted for 63 per cent of the variance in responses. Factors 1 to 4 were named as mutual support, common goal, multi-skills and task interdependence. Relating factory F, three factors were able to be obtained and the cumulative percent of variance explained was 61 per cent. Those extracted factors were labelled as mutual support, multi-skills and common goal. In D and G, two factors could be obtained and the percentage of variance explained was 65 and 57, respectively. These two factors are mutual support and common goal.

### *Reliabilities*

Cronbach  $\alpha$  coefficients were calculated to measure reliability of the items. Felid (2013) described that Cronbach  $\alpha$  evaluates to what extent the items measure one factor or construct. All the Cronbach  $\alpha$  coefficients of constructs which were used in the study ranged from 0.80 to 0.52 (Table 8). According to the rule of thumb of George and Mallery (2003), the mutual support factor shows a good and acceptable level of reliability since the Cronbach  $\alpha$  coefficients ranged from 0.80 to 0.69. Regarding common goal and task interdependence, some of the reliability values are acceptable. However, there are reliability values which show low Cronbach  $\alpha$  coefficients and those factors can be identified as two- item scales. According to Gliem and Gliem (2003) and Peterson (1994), Cronbach  $\alpha$  coefficients value depends on the number of items which consists of a factor and, particularly, two-items present low alpha values (Field, 2013). Due to that, some scholars argue that the calculation of alpha is inappropriate and meaningless for two-item scales (Verhoef, 2003; Sainfort & Booske 2000). However, Gliem and Gliem (2003) argued that Cronbach  $\alpha$  coefficients value for two items should be at least 0.40.

### **6.4.2 Relationships between Team Characteristics**

Next, relationships between team characteristics which were extracted through the EFA are concerned. Therefore, by using the characteristics of team, firstly, correlations between factors are calculated. Then, the regression analysis is carried out.

*Correlation Values*

Results (Table 9) revealed that there are correlations between the team characteristics.

**Table 9 Correlation Values**

Variables	All		Factory A			Factory B			
	MS	CG	MS	CG	TI	MS	M-SK	CG	TI
MS	1		1			1			
M-SK						.56**	1		
CG	.59**	1	.38**	1		.56**	.41**	1	
TI			.59**	.66**	1	.47**	.17*	.34**	1

Variables	Factory C			Factory D		Factory E		
	MS	CG	TI	MS	CG	MS	CG	TI
MS	1			1		1		
M-SK								
CG	.53**	1		.13	1	.40**	1	
TI	.54**	.27**	1			.14	.27**	1

Variables	Factory F			Factory G	
	MS	M-SK	CG	MS	CG
MS	1			1	
M-SK	.32**	1			
CG	.38**	.26**		.31**	1
TI					

\*p<.05, \*\*p<.01

**Note:** M-SK- Multi-skills, CG-Common goal, TI- Task Interdependence MS- Mutual support.

**Source:** The Analysis Results.

In which, regarding the sample as a whole (aggregated all factories data), there is a significant positive relationship between common goal and mutual support ( $r=0.59$ ,  $p<0.01$ ). Also, relating each factory, the common goal factor was related with mutual support in each factory, except factory D and comparatively this relationship is high in factory B ( $r=0.56$ ,  $p<0.01$ ) and factory C ( $r=0.53$ ,  $p<0.01$ ). Multi-skills factor could be extracted only from factory B and F and they also presented a significant positive relationship with mutual support (factory B  $r=0.56$ ,  $p<0.01$  and factory F,  $r=0.32$ ,  $p<0.01$ ).

Further, task interdependence in factory A, B and C has a significantly positive relationship with mutual support. Typically, the correlation value between mutual support and task interdependence in factory A is ( $r=0.59$ ,  $p<0.01$ ), in factory B is ( $r=0.47$ ,  $p<0.01$ ) and in factory C is ( $r=0.54$ ,  $p<0.01$ ). However, there is not a significant relationship between mutual support and task interdependence in factory E.

### *Regression Analysis*

According to the EFA results, mutual support and common goal factors can be considered as the common characteristics for all organizations which stated that they use teamwork in their work processes. However, when compared with factories separately, characteristics take various patterns in one factory to another. These patterns may depend on the relationship between the characteristics. For example, as it was described in the literature, mutual support is enhanced by the other factors. This association can be evaluated further by using regression analysis (Table 10).

However, before we consider the results of the regression analysis, it is important to carry out collinearity diagnostics, because as is identified by Hair et al. (2019), multicollinearity is a statistical issue which can occur in the analysis process such as which have been used in the study. Multicollinearity means the “extent to which a variable can be explained by the other variables in the analysis” (Hair et al., 2019, p.123). Therefore, collinearity diagnostics were conducted. The

result revealed that there is no perfect multicollinearity in each model because when based on the collinearity diagnostics, tolerances are more than 0.1 (Field, 2013) and the largest variance inflation factor (VIF) is less than 10 (Belsley et al., 1980). Therefore, regression analysis results are outlined as follows.

The common goal factor explains mutual support considerably by thirty four per cent, as a whole (adjusted-  $R^2=0.34$ ,  $F=419.7$ ,  $p<.001$ ). Here, when one point increases on the common goal it corresponds to 0.587 points increase on the mutual support. Further, when it looks at organizations separately, this relationship can also be seen in factory B, C, E and G. Although there is not a significant effect on mutual support from the common goal of factory A, employees' perception on the common goal creates a negative effect on the mutual support ( $\beta=-0.024$ ,  $p>.5$ ).

**Table 10 Regression Results with Mutual Support as the Dependent Variable**

	All Factories	Factories						
		A	B	C	D	E	F	G
Independent Variables								
Multi-skills			.290 <sup>(1)</sup>				.341 <sup>(1)</sup>	
Common Goal	.587 <sup>(1)</sup>	-.024	.392 <sup>(1)</sup>	.417 <sup>(1)</sup>	.125	.389 <sup>(1)</sup>	.134	.307 <sup>(1)</sup>
Task Interdependence		.610 <sup>(1)</sup>	.321 <sup>(1)</sup>	.431 <sup>(1)</sup>		.036		
Adjusted-R <sup>2</sup>	.34	.34	.53	.45	-.004	.14	.14	.09
F-Ratios	419.3 <sup>(1)</sup>	38.3 <sup>(1)</sup>	64.2 <sup>(1)</sup>	57.9 <sup>(1)</sup>	.79	7.2 <sup>(1)</sup>	8.0 <sup>(1)</sup>	11.8 <sup>(1)</sup>
N	800	144	169	142	52	79	88	115

(1) Indicates  $p<.001$

All standardized regression coefficient ( $\beta$ ) values have been reported regarding each independent variable.

**Source:** Results of statistical analysis on the survey data.

Further, multi-skills is also a component which can be used to predict mutual support. In factories B and F, the multi-skills factor has created significant effect on the mutual support. When multi-skills increase by one point, mutual support

will increase by 0.290 (at B) and 0.341 (at F) points. Also, employees' perception of task interdependence has an ability to enhance mutual support among the workers. In factories A, B and C, a one point increase on the task interdependence factor corresponds to 0.610, 0.321 and 0.431 points increase on mutual support, respectively. However, task interdependence in factory E has not capability to increase mutual support because the standard regression coefficient is not significant ( $\beta=-0.036$ ,  $p>.5$ ).

Comparatively, factory B has higher explanation capability than other organizations since, factory B is the sole organization which met all team characteristics which have been considered in this study, except variables of team autonomy. Regression analysis results (Table 10) suggest that multi-skills, common goal and task interdependence factors explain more than fifty per cent of mutual support (adjusted-  $R^2=0.53$ ,  $F=64.2$ ,  $p<.001$ ).

#### **6.4.3 Confirmation of Teamwork in the Sri Lankan Context**

The main objective of the current study is to confirm the existence of teamwork in manufacturing organizations in Sri Lanka. In the literature review (chapter 3), predictable teamwork models: autonomous teamwork model, semi-autonomous teamwork model and supervised teamwork model, in work organizations were conceptualized and explored. Meanwhile, the regression results (Table 10) present the details to develop a predictable teamwork model regarding the Sri Lankan context. Team autonomy was unable to be put into the regression analysis. And, further it has been revealed that the effect of workers' level characteristics: multi-skills, common goal and task interdependence, to the working level feature: mutual support. Therefore, having the theoretical discussions and practical findings, the most predictable teamwork model in the Sri Lankan context is evaluated through the structural equation modelling (SEM) as follows.

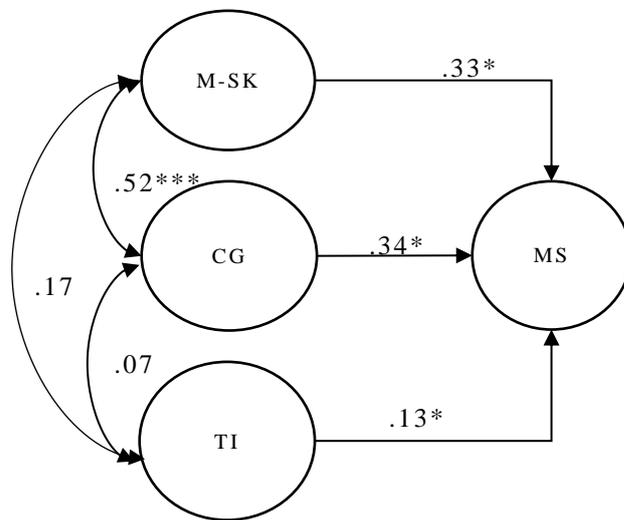
##### *Causal Relationship of Variables*

When we consider the adjusted  $R^2$  of each organization, the value in factory B is

comparatively higher than other factories. Typically, the value indicates that 53 per cent of the variance in mutual support can be predicted from the variables of multi-skills, common goal and task interdependence. Accordingly, considering these evidences, the path analysis is performed through the structural equation modelling (SEM) to evaluate the predictable relationships and models regarding the Sri Lankan context. The following goodness-of-fit indices provide information about the overall fitness of the empirical data to the models.

Regarding factory B, a model was confirmed by using the paths of multi-skills → mutual support, common goal → mutual support and task interdependence → mutual support. The typical fit indices for the Model of factory B were the overall chi-square being statistically significant ( $\chi^2(48) = 77.268, p < 0.001$ ); CMIN/DF = 1.610, GFI = 0.929 (Goodness of Fit Index), CFI = 0.923 (Comparative Fit Index), IFI = .926 (Incremental Fit Index), RMR (Root Mean Residual) = 0.046 and RMSEA (Root Mean Square Error of Approximation) = 0.06.

**Figure 13 Estimated Structural Model of Factory B**



\*p < .05    \*\*\*p < .001

**Note:** M-SK- Multi-skills, CG-Common goal, TI- Task Interdependence MS- Mutual support.

In general, a conceptualized model is accepted as a well-fitting one, when the fit indices of CMIN/DF < 2 (Loo & Thorpe, 2000), the chi-square is statistically not

significant,  $RMSEA < 0.06$  and other fit indices: GFI, CFI and IFI are 0.90 or greater and  $RMR < 0.05$  (Hair et al., 2019; Oshio, 2017). Accordingly, the SEM analysis suggested that the Model in factory B has acceptable overall goodness-of-fit indices regarding the relationship of characteristics of team and thus the estimated model can be presented as above.

According to structural coefficients which have been shown in Figure 13, multi-skills has a positive effect on mutual support ( $\beta = 0.33, p < .05$ ). And, common goal has also made a significant direct effect upon mutual support ( $\beta = 0.34, p < .05$ ). Finally, task interdependence has a positive effect on mutual support ( $\beta = 0.13, p < .05$ ). Furthermore, there is a significant positive correlated effect between the common goal and multi-skills, as is shown in Figure 13 ( $\gamma = 0.52, p < 0.001$ ).

In addition to factory B, the values of adjusted  $R^2$  in factory A and C also indicates comparatively higher numbers than other factories. In factory A and C, 37 and 45 per cent of the variance in mutual support can be predicted from the variables of common goal and task interdependence, respectively. Therefore, even though the model of factory A and C is incompatible with the models which were developed in the theory (Figure 5-7), the fit of the models was estimated through the structural equation modelling (SEM) including the paths of common goal  $\rightarrow$  mutual support and task interdependence  $\rightarrow$  mutual support. However, fit indexes of both models were incompatible with the general acceptances.

#### **6.4.4 Supplementary Analyses**

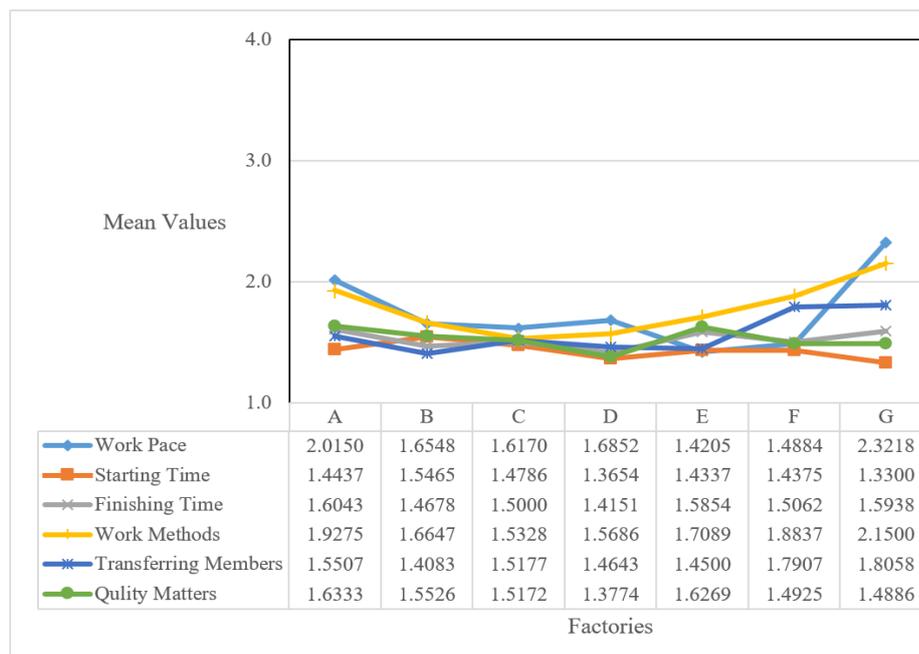
In the current study, as the additional analyses, exploration of pattern of decision-making in each organization and comparison of employees' awareness of common team characteristics between organizations is planned. Therefore, findings of the supplementary analyses are reported as follows.

##### *Patterns of decision-making*

Even though five- point Likert-type scales with “strongly disagree” to “strongly agree” were used to measure multi-skills, common goal, task interdependence and

mutual support, there was a limitation to use the five- point Likert-type scales to evaluate team autonomy since the pilot survey and the pre-test results revealed the inappropriateness of them. For example, even though there is not any sound evidence to prove the team autonomy in the factory which was used to carry out the pilot survey, more than seventy per cent of workers agreed (agree+ strongly agree) with the statements of “we can decide our work; pace, starting time, finishing time and methods”. Though, in the pre-test, all workers’ answers were “we cannot”. Based on these reasons, in the final survey, team autonomy was measured by asking who makes the decisions on work pace, starting time and finishing time of work, work methods, job rotation in the workplace and production quality.

**Figure 14 Mean Values of Team Autonomy Measurements**



**Note.** Numbers on the vertical axis (1-4) indicate ways of decision making. More than or equal to 1 and less than 2 shows centralized decision making, more than or equal to 2 and less than 3 shows participative decision making and more than or equal to 3 and less than or equal to 4 shows autonomous decision making.

**Source:** Survey data.

As mentioned earlier, items which were used to measure the team autonomy were excluded EFA which was carried out with other characteristics of teams: multi-skills, common goal, task interdependence and mutual support because, most of the items exhibited the floor effect. Further, when we consider the nature of questionnaire responses, more than 80 per cent of answers of measurements leaned to decisions by management<sup>18</sup> which represents the decision making patterns of participative or centralized.

Typically, Figure 14 shows mean values of the items which were used to measure team autonomy in each production organization. Shapes of the line chart (Figure 14) reveal the parties which possess decision making power in the manufacturing organizations in Sri Lanka. Nearly all mean values have spread out on or below line 2 which represents workers' participation (participation line). Only working pace and working methods of factory G display a little above line 2. It means, all items: working pace, starting time of work, finishing time of work, work methods (way of work), exchange workers within the same workplace and quality control matters, are in the left side of Figure 8 (Mean values < 3 → No team autonomy). Typically, most of the items are very close to line 1, the centralized decision making pattern (Decided by management). Further, the grand means (mean of means) of the factories (A-1.70, B-1.55, C-1.53, D- 1.48, E- 1.54, F-1.60 and G- 1.78) are also in between line one and two. When these values are re-arranged in ascending order, factory names can be shown as G, A, F, B, E, C and D. As a whole, each value has shown the centralized nature in decision making. Factory G, A and F, however, are in very close position to the participation mode than other organizations.

#### *Degree of Awareness regarding Common Characteristics of Team*

According to EFA results (Table 8), common goal and mutual support factors were common for all factories. There, however is possibility to have differences

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<sup>18</sup> This consists of both scales of Decide by the Management and Decide by the Management discussing with us.

in each factory regarding the strength of employees' perception of common goal and mutual support among employees and the understanding of these difference would be helpful to discuss the nature of each characteristics regarding the Sri Lankan context. Because, as a supplementary analysis, the One-way ANOVA test was conducted to understand those absolute differences of each organization. Furthermore, other than the differences between each organization calculated, the statistical analysis was also performed considering demographic features to find out a basis to explain the differences. Accordingly, those findings are reported as follows.

#### Common goal

Based on the ANOVA values, employees' perception on common goal in each factory is significantly different ( $F_{6, 800} = 10.552, p < .001$ ). Further, to understand strength, a multiple comparison was performed by using the Bonferroni test (Field, 2013) and results revealed that there are not significant differences between the garment manufacturing sector's organizations (C, D, E and F). However, they presented significant differences with the organizations in the other two sectors (porcelain sector: A and B, Transformer sector: G). Therefore, the ANOVA test was carried out for the sectors and the result was significant at 0.1 per cent level ( $F_{6, 800} = 17.213, p < .001$ ), again. Multiple comparison results revealed that there are significant differences of mean values between the garments sector and the porcelain sector (factories A and B) and the garments production sector and the transformers sector (factory G).

Meanwhile, the nature of differences between sectors can be explained with the demographic information (Table 6): proportion of male and female, tenure and education level. According to the one-way ANOVA<sup>19</sup> results, there is a significant

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<sup>19</sup> Normally, the t-test is used to evaluate whether there is a significant difference between two groups. However, in the current study, the one-way ANOVA which is normally carried out to evaluate a difference between more than two groups was performed because, there is possibility to violate the assumption of normality by the t-test (Hoekstra et al., 2012) and the group which

difference between men and women regarding awareness of the common goal ( $F_{1, 774} = 6.580, p < .01$ ) and the average factor score of women is higher than men. When we consider the men and women proportion of all factories, more than three fourths of workers are female (74.9 per cent) and in which female workers in garment sectors represent 55 per cent.

Also, there is a significant difference ( $F_{1, 761} = 12.495, p < .001$ ) between both work experience durations<sup>20</sup>. When we compare both levels of work experience, the average factor score reveals that a person who has less work experience (less than or equal to 10 years) has high intention about the common goal rather than a person who has more work experience, in the same organization. In the sample, 70.1 per cent of workers say that they have less than or equal to 10 years of work experience in the same organization and among them, a large portion of workers are in the garments manufacturing sector (61 per cent).

Furthermore, workers who belong to both educational levels: less than 13 years of school education or more and equal to 13 years of school education, also have a varying nature of consciousness about the common goal. According to the ANOVA result, both levels significantly differ ( $F_{1, 774} = 6.580, p < .01$ ) in the average factor score, workers who have less than 13 years of school education have more intention of the common goal rather than more or equal to 13 years of school education. The demographic information (Table 6) reveals that, 41.1 per cent of production workers have less than 13 years of school education as a whole

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possesses a higher average factor score is want to be known by creating an average plot. As well, ANOVA can be used to evaluate the mean difference between two group, too (Iwai & Yasuda, 2012).

<sup>20</sup> According to Table 6, the average level of work experience in the present organization is more than 5 and less than or equal to 10 years in aggregated data set. Based on this, a new tenure variable is made by adding data as, less than or equal to 1+ more than 1 and less than or equal to 5+ more than 5 and less than or equal to 10 = 1 (less than or equal to 10 years) and more than 10 and less than or equal to 15+ more than 15 and less than or equal to 20+ more than 21, and less than or equal to 25, and more than 25 = 2 (more than 10 years).

and in this percentage a large number of workers are in the garment sector (72.5 per cent).

Moreover, a dissenting voice on the common goal can be seen between the workers who have worked in other organizations before joining the present organization and who have not such an experience. According to the ANOVA results of the dataset, ideas of both groups vary significantly ( $F_{1, 785} = 5.510$ ,  $p = 0.019$ ) and the average factor score further reveals that workers who have work experience in other work organization(s) present more intention to the common goal rather than workers who have not such an employment history. Relating this, most of the workers in the garment sector have work experience in other organizations more than workers who are in the other two sectors. Typically, when aggregating all sectors' data, 44 per cent workers have work experience in other work organisations, particularly among them, nearly two thirds of workers are of the garment sector.

#### *Mutual support*

Also, the ANOVA test was carried out for mutual support. The ANOVA result ( $F_{6, 800} = 3.109$ ,  $p < .01$ ) revealed that there are significant differences between factories and multiple comparison results presented that the difference between factories C and B is considerable (mean difference  $C - B = 0.35$ ,  $p = 0.008$ ). Meanwhile, as the common goal factor, there were not significant differences between the three sectors ( $F_{6, 800} = 2.324$ ,  $p < .1$ ).

At the same time, when the mutual support factor is compared through the demographic features, considerable dissimilarities were unable to be found between both sexes and education levels regarding mutual support activities, for instance ANOVA values for both sexes are insignificant at a probability level of less than 0.05 ( $F_{1, 774} = 1.543$ ,  $p = 0.215$ ).

However, the distinct nature of mutual support exists in the tenure and age levels. Regarding tenure, there is a significant difference ( $F_{1, 761} = 6.187$ ,  $p = 0.013$ ) between both tenure levels and according to average factor scores, as person who

has less work experience (less than or equal to 10 years) has high intention about the mutual support rather than a person who has more than 10 years of work experience, in the same organization. According to descriptive data, 100 per cent of workers in factory C have less than or equal 10 years of work experience and 57.5 per cent of workers in factory B have more than 10 years of work experience and this value is comparatively higher than other organizations. Further, factory C is comparatively newer than other factories and 79 per cent of workers have less than or equal to 1 year of work experience. As well, there is a considerable distinction ( $F_{1, 783} = 5.344, p < 0.05$ ) between both age levels<sup>21</sup>: less than or equal average level of age and more than average level of age. Average factor scores presented that a person who belongs to less than or equal average level of age, supports more than someone who is in the more than average level of age. Typically, the percentage of less than or equal average level of age in factory C is 70.5 per cent and in factory B is 35.3 and this is lower than other organizations.

Meanwhile, according to the above findings, it seems that the demographic features that were considered as the control variables, have relationships with the team characteristics, particularly, mutual support and common goal. However, there were not the supportive evidences that the control variables<sup>22</sup> have considerable significant relationships with them. Typically, correlation values of them were very small. Therefore, the control variables were not included in the regression equations in Table 10.

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<sup>21</sup> According to Table 6, average level of age is 26-30 in the aggregated data set. Based on this, a new age level variable is made adding data, a less than or equal average level of age (26-30) =1 and a more than average level of age=2.

<sup>22</sup> For example correlation values (relationship between team characteristics: mutual support and common goal, and the control variables) are depicted in appendix 24, regarding the aggregated data set.

## 6.5 Chapter Summary

This chapter was organized to present the findings on the quantitative research, that is, the QUAN part of the sequential triangulation. Firstly, demographic features were presented with the organizational background. In the sample, nearly three-fourths of workers were woman and this percentage is remarkably high in the garments manufacturing sector and more than half of the workers have got married. Further, over half of workers have more than or equal to 13 years school education. However, the situation was different in the garment sector since education level was lower than the other two sectors. The average length of the employment in the present organization was dissimilar organization to organization and comparatively, tenure was higher in the organizations which belong to the porcelain sector than the other sectors.

Then, the chapter allocated a space to present the qualitative data regarding the organizational background and HRM practices, which was gathered through the interview with the managerial workers in each survey field since, in addition to the main methodology, the QUAN + qual triangulation was also used to find out the evidences which are helpful to the further clarification regarding the quantitative analysis results. Qualitative findings revealed that some organizations have introduced the management practices which create the favourable environment to teamwork. For instance, factory B and F have arranged their training and development considering the expansion of competencies of the employees. However, as a whole, there are also management practices which can be seen in the traditional work organizations. Particularly, the decision making task was performed by the managerial level workers rather than the workers.

Finally, the results of the statistical analyses were presented. Exploratory factor analysis (EFA) was used to extract the factors that are the characteristics of team which are supposed to exist in manufacturing organizations and the results unveiled that there are different factor patterns in the organizations. All the team characteristics: multi-skills, common goal, task interdependence and mutual support, except team autonomy, could be extracted only from the Japanese-

affiliated porcelain manufacturing organization. However, some team characteristics could be measured in other organizations. Furthermore, the EFA results revealed that the common goal and mutual support factor could be measured in all organizations. Next, relationships of the team characteristics were calculated. According to the correlation values, there were significant positive relationships between team characteristics and particularly among them, the relationship between mutual support and other characteristics was remarkable in factory A, B and C. In the present study, mutual support is considered as the dependable variable and other characteristics are independent variables and therefore, regression analysis was performed by using these relationships. The regression equation varied organization to organization depending on the possibility of factor extraction and the results confirmed that there are positive effects from the workers' level team characteristics: multi-skills, common goal and task interdependence to the working level characteristic: mutual support. Typically, this could be seen in the Japanese-affiliated organization. At the same time, the causal relationship was evaluated. The model fit indexes confirmed that there is an acceptable model of teamwork in the Japanese organization. However, any acceptable model was unable to be confirmed in the other organizations. Additionally, the situation of team autonomy was measured by using mean values of each item which was used in the questionnaire. In other words, pattern of decision making of each organization was evaluated by using mean values. The results reported that none of the organizations have given decision making power to the team and such power is still in the hand of management. Also, strength of employees' perception of common characteristics of team: common goal and mutual support, exhibited different nature between organizations in the Sri Lankan context.

Accordingly, in the next chapter these results will be discussed considering the literature of teamwork to make a conclusion regarding the existence and the nature of teamwork in the manufacturing organizations in Sri Lanka.

## **Chapter 7**

### **Discussions**

#### **7.1 Introduction of the Chapter**

The main aim of the present study is to confirm the existence of teamwork in the Sri Lankan context. The confirmation is discussed through this chapter concerning the theoretical review and the empirical survey findings which were outlined in the previous chapters. Firstly, demographic and organizational features of the sample of the present study are discussed comparing the previous findings regarding the Sri Lankan context. Then, the nature of each characteristic of team: multi-skills, common goal, task interdependence, team autonomy and mutual support, is pointed out, separately. Finally, confirmation of teamwork of manufacturing organizations in Sri Lanka is carried out as the main purpose of the study.

#### **7.2 Organizational and Demographic Features**

Demographic features are shown in Table 5 and 6. When considering gender distribution, the female proportion is higher than the male in each organization, except A. In the garments manufacturing sector, the number of female workers is over 90 per cent. Previously, as Wickramasinghe (2016) has confirmed, most of the operational tasks are performed by women in the garments manufacturing. Not only in the garments manufacturing sector but in other production organisations (porcelain and transformers) can also be seen a similar trend. However, comparatively, the male proportion is higher in porcelain and transformer producers than garments manufacturing firms.

Also, most of the workers are married and between 21-30 years old. When considering the whole sample, 26 per cent of female workers are in the age level of 21-25 and this age level is similar with the findings of Arai (2006) and Shaw (2004) that existed more than a decade ago. It, however, contradicts their point of view regarding marital status. Though they have insisted that most of the female

workers are unmarried at that time, as Wickramasinghe (2016) has also found, it takes the opposite trend because most of the workers are married, presently. Regarding the work experience at the present organization, as is reported by Ruwanpura (2012), it can be concluded that there is higher employee turnover in the garment manufacturing sector than other sectors because employees' tenure and the durations that organizations have been operating are incompatible, largely (Table 6). For example, the majority of workers have less than or equal to 1 year of work experience (79 per cent) in factory C, although the factory has been doing production from 2015.

Furthermore, most of the garments production sector workers (68 per cent) have less than 13 years of school education and this nature exists for a long time because Wickramasinghe and Wickramasinghe (2011) and Arai (2006) also have reported identical facts regarding the education level. However, the situation which is in factory F is to some extent different from other organisations in the same sector because the number of workers who have more than or equal to 13 years of school education is high (44.1). Meanwhile, workers in the porcelain (A & B) and transformer (G) manufacturing factories are educated since a large number of workers have more than or equal to 13 years of school education. The education level of transformer manufacturing organization (factory G) is remarkable, because 90 per cent of workers have more than or equal to 13 years of school education and in which about 15 per cent of workers have graduate level of education qualifications. Even though, in the national statistics, most of the people in the workforce of Sri Lanka (nearly 80 per cent) have less than 13 years of school education, however, it presents a sloping trend and the percentage of workers who have more than or equal to 13 years of school education is increasing year by year (DCSSL, 2017). Accordingly, the demographics features of production employees in Sri Lanka have been changing, however slowly in pace.

### **7.3 Characteristics of Team in the Sri Lankan Context**

The study is organized to confirm the existence of teamwork in manufacturing organizations in Sri Lanka which say that they have been practicing teamwork in their production process. Having the purpose of the study, both qualitative and quantitative empirical studies were arranged to investigate the practical situation in Sri Lanka. And the results were lined up in the previous chapter. In this section, these results are discussed considering literature of teamwork and previous findings regarding the similar discipline.

Results of the interview-based investigation and factory floor observation that is the qualitative study, revealed that there are manufacturing organizations which have established a suitable workplace environment for teamwork such as factory X, and which have not met the requirements for teamwork such as factory Y, in the Sri Lankan context. However, notwithstanding the real situation, both organizations insist that they have been practicing teamwork. Therefore, to clear this contradictory phenomenon, the quantitative empirical study was set up expanding the sample size.

In the quantitative study, the questionnaire was arranged basically, based on team characteristics: multi-skills, common goal, task interdependence, team autonomy and mutual support. According to the results, mutual support and common goal were able to be extracted from all manufacturing sites in Sri Lanka which were used as a sample for this study (Table 8). Further, when we consider organizations separately, there are different kinds of patterns of team characteristics extraction. For instance, all characteristics of team, except team autonomy, could be extracted from factory B and conversely, only common goal and mutual support could be extracted from factory D and G.

Mainly, these different characteristics will be discussed considering the theoretical aspects of team and real situations of the manufacturing sites, in this section. Prior to that, based on the preceding discussions (Hair et al., 2019; Yamagiwa & Hattori, 2017; Sato, 2015b; Oda, 2014; Field, 2013; Matsui & Nakamura, 2002; Wanous & Reichers, 1996), statistical methods which have been

used in the study and results themselves are explored. In the process of empirical survey of the study, firstly, the real situation of the production floor was grasped through the qualitative study. Then, based on the information which was gathered in the qualitative study and the previous research, a questionnaire was created to carry out the pilot survey. After the pilot survey, subsequently, the pre-test was carried out. Finally, the quantitative field survey was arranged developing a questionnaire which was edited and improved based on the findings of the pilot survey and the pre-test, in particular, considering the reliabilities, multiple-items were included to the questionnaire (Hair et al., 2019; Sato, 2015b; Field, 2013; Wanous & Reichers, 1996). Typically, the questionnaire consists of 3 items for multi-skills, 3 items for common goal, 6 items for task interdependence, 6 items for team autonomy and 5 items for mutual support. As the statistical analysis, EFA<sup>23</sup> was performed because EFA is simply used to evaluate the extent to which the measures are acceptable (Field, 2013; Gliem & Gliem, 2003). Based on this argument, there is possibility to think that the different patterns of factor structure (Table 8) demonstrates a problem with the measures because the questionnaire is inapplicable to measure some factors. However, measurements have presented considerable or acceptable reliabilities regarding the sample of some organizations. For example, Cronbach  $\alpha$  coefficient regarding the measurements of mutual support in factory C and F is 0.80, regarding measurement of the common goal in factory F is 0.72 and relating measurement of multi-skills in factory B is 0.66. Further, factors which consist of two items: multi-skills in factory B and task interdependence in factory A, B, C and E, have also met the rule of thumb of Gliem and Gliem (2003) that Cronbach  $\alpha$  coefficients value for two items should be at least 0.40. Particularly, Cronbach  $\alpha$  coefficient is 0.77 for task interdependence factor which consists of two items in factory E.

Moreover, EFA is helpful to understand underline pattern and relationship of number of variables and it summarizes items into small number of dimensions which are called as factors (Hair et al., 2019; Field, 2013; Matsui & Nakamura,

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<sup>23</sup> EFA which team autonomy was excluded is considered.

2002). In other words, based on the questionnaire responses, highly correlated items group together and those groups of variables are named as factors and communalities values (common variance) of items determine the factors. In the factor analysis of the current study, items which have high communalities, in fact greater than 0.3 (Mohapatra & Murarka, 2016; Oda, 2014), have gathered as factors (see Appendix 16-23) and low communalities were excluded. And if further clarify, items which have unique variance (lacking a mutual relationship or connection: uncorrelated items), that is low communalities, do not have grouping capability and they appear as unique factors (Hair et al., 2019; Field, 2013). This deduction of items which have low communalities also a reason for the different patterns of factor extraction which have been shown in Table 8. The previous studies (De Winter et al., 2009; Hogarty et al., 2005) have elucidated that communality issues could be tackle by increasing of sample size of the study. However, this is contradict with the findings of the current study, because of, communality values of the factor analysis for aggregated data set which compose of 839 show low values. Therefore, there are various things to clarify regarding the statistical methods and these things are hoped to consider in future studies, further. Of cause, factor analyses and reliabilities (Table 8) are not the techniques for testing whether or not team characteristics exist in the manufacturing organizations. However, extracted factors are able to be explored with the HRM practices of each manufacturing organization. The reason has been explained in the following paragraph.

In the present study, seven manufacturing organizations were selected as the sample. Most of the preceding research which has used different kinds of organizations as the sample of their study has carried out the analysis aggregating all data as one sample. However, consistent with the aim, the present study concerned carrying out the statistical analysis separately regarding each organization as has been done in the previous research (García et al., 2008; Bakker et al., 2003; Jones & Smith, 2001; Ramirez et al., 2001). Even so, statistical analyses (EFA and regression analysis) were performed by using the aggregation

of data of all factories, too, to understand the nature of Sri Lanka as a whole. Meanwhile, when we consider the above preceding studies, which have carried out analysis separately, that is analysis for each sample, they could extract a similar factor pattern regarding each sample. That is, structures of factors are the same in each sample. On the other hand, there is a limitation to find out a preceding study in which different structures of factors, like the findings of EFA of the present study (Table 8) has been extracted by using an identical questionnaire for numbers of samples. However, for instance, García et al. (2008) reported that cultural similarity is a reason for why an identical pattern of factors are able to be extracted from different samples. Conversely, based on this argument, it can be assumed that cultural dissimilarities would create different patterns of factors regarding different samples. In a similar vein, even if culture is not the subject, it can be assumed that the managerial practices which encourage and are helpful to establish teamwork might provide further proofs to confirm the different patterns of factor in each organization of the present study.

Accordingly, characteristics of team are discussed putting concentration on the above assumption that HRM practices would explain the extracted factors in each organization.

### **7.3.1 Multi-skills**

Firstly, the multi-skills factor is considered. The multi-skills factor is identified as a certain characteristic of team-based work organizations (Morita, 2014; 2008; 2001; Katzenbach & Smith, 1995; Mueller, 1994; Wellins et al., 1991; Orsburn et al., 1990; Trist et al., 1987). Practically, workers in a team are trained on various kinds of tasks to acquire multi-skills qualifications (Morita, 2008; Olivella et al., 2008). Based on the factor analysis results (Table 8), the multi-skills factor was able to be extracted only from factories B and F. This can be explained with the management practices, particularly, training and development, which have been introduced to build the multi-skills capabilities of their employees.

Developing multi-skills is a specific feature of Japanese work organizations

(Morita, 2008; Fujimoto, 2001). Similarly, multi-skills training has been implemented in factory B as a Japanese subsidiary, too. In factory B, they have established a multi-skills development program under “Monozukuri Concept”. According to the HR manager of factory B, the Monozukuri Concept is a program which considers cost reduction and improvement of safety and training of the employees. Every workplace has to manage an Education and Training Skills Map to visualise the workers’ individual skills. Under this multi-skills development program, they hope to train their workers on at least three processes of the production flow. OJT is used as a training method and job rotations take place continuously, based on the training plan. Even newly recruited employees are also trained on OJT.

Multi-skills factor could be evaluated in factory F, too. Factory F has followed the TPS to arrange their production process. These findings support the previous discussions on multi-skills development in the TPS based production organizations in a Sri Lankan context. Even though they have not conducted much discussion, Wickramasinghe and Wickramasinghe (2017) have revealed the multi-skills factor in the manufacturing organizations which are based on TPS. Further, Wanninayaka (2019; 2015) has provided the evidences to prove multi-skills development in the Sri Lankan production work organizations which have established TPS. As a TPS based manufacturing site, factory F has organized a separate in-site training centre (MSD unit) to provide multi-skills training for the existing workers. They have named it as “Multi-skill Development Programme (MSDP)”. Typically, the MSD unit trains 48 team members per week on different kinds of sewing tasks. According to an MSDP manager, they hope to train their workers on at least 5 tasks of the production process. However, when compared with the training method of the Japanese subsidiary (factory B), the training method of factory F takes a different nature because they have established in-site training centre to develop the multi-skills of existing workers as an Off-JT method (Greenwood & Randle, 2007). Further, regarding factor F, there is not any supportive evidence to prove whether job rotation as a training method (Dessler,

2013) is conducted or not. Also, the training school which has been set up in the factory provides 3 months training for the newcomers.

Contrastively, even in other production organizations (A, C, D, E and G) that have stressed that they are practicing teamwork, the multi-skills factor has been unable to be measured through the items: *“I can perform more than one task in the team”*, *“Team members of my team know each other’s job”* and *“I can cover absentee work in my team”*, in which were measured multi-skills and uniqueness of each item greater than the common aspect of them, even though these items were grouped as a factor in factory F. Meanwhile, impossibility of multi-skills factor extraction does not mean that there are not workers who have multi-skills, completely. However, although it was not proven that there exists the causal relationship between HRM practices and extracted factors, it can be assumed that the HRM practices explain to some extent the situation in other organizations relating multi-skills development.

Practically, team-based work practices were established in factory A, in 2001 (Bodwell, 2005). However, while saying that there is teamwork, they are practicing a traditional work practice. According to the assistant HR manager, there is a management decision to develop specialized workers on one task instead of multi-skills workers. Meanwhile, this one-man one-job work assigning pattern has been identified as a characteristic of conventional work organizations (Morita, 2008; Okubayashi, 2002; Wellins et al., 1991; Orsburn et al., 1990). As well, factories C, D, E and G also have not any formally established training program to expand their workers’ competencies. However, managerial level workers of factories C, D, E and G insist that, in every working day, they have to transfer the workers between production workplaces to perform the line-balancing task to overcome the effects from the absenteeism. Based on the discussions of Sakamoto (2018), Sato (2016) and Dore and Sako (1998), this transferring task can be interpreted as an informal OJT since after the transfer of one worker to another production workplace, its supervisor provides required knowledge to a worker who came from another workplace to carry out the task. It means that occasionally

workers have the chance to get training on different kinds of tasks. Notwithstanding skills which they gain on such trainings, the multi-skills feature was unable to be measured in Factory C, D, E and G.

Accordingly, in the Sri Lankan context, there are manufacturing organizations which have been providing substantial facilities to develop the multi-skills capabilities of workers. And conversely, some others are not. Even if the reality is so, the empirical survey findings revealed that most of the employees who are working in the manufacturing organizations have intention to learn more tasks of their work process. Kyndt et al. (2014) and Kyndt and Baert (2013) have argued that employees' intention to learn new things extends the skills because it fosters actual participation of employees in the learning. Why do people want to learn more? According to the literature, the multi-skills factor helps to create a favourable work environment for the workers (Ketchum & Trist, 1992) by liberating workers from the monotonous work and high work-load condition (Yoon et al. , 2016; Klein, 1994) and enhancing the psychological needs on the job (Neirotti, 2018; Sapada et al., 2018) and supportive practice (Morita, 2008). Moreover, participation in multi-skills development programs expand the existing capabilities of workers (Potnuru et al., 2018; Klein, 1994). These expansions of competences may increase the earning of employees when the competence-based payment calculations is available (Kambayashi et al., 2018; Chaparro & Lora, 2017), as a result, employees intend to learn more (Murray & Gerhart, 2000).

In the Sri Lankan context, typically, 91 per cent<sup>24</sup> of employees in all seven manufacturing organizations have expressed their intention to learn new things. In which, 22.3 per cent of workers are in factory B. A small number of workers (9 per cent) say that they do not want to learn more tasks, in which more than half of them are in factory A. However, organizations do not pay for additional skills, directly. It means that there is not competence-based payment calculations. This could be revealed through the interviews with the managerial level workers of the

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<sup>24</sup> The percentage is calculated using the answer for Q12: I want to learn as many jobs as possible. Scales of Strongly agree and agree were aggregated together.

manufacturing organization (Table 7) and employees' responses also confirmed the answers of the managerial level workers further, for example most of workers in factory B and F, which have established multi-skills development programs, said that they have not been paid for additional skills, and typically, those values are 88<sup>25</sup> per cent and 66 per cent, respectively,

Then, why are Sri Lankan workers willing to obtain additional skills? The scenario can be explained by considering the *status of quo* in factory F (for further reading see Wanninayaka, 2019). After quantitative data was gathered, an interview with 10 production workers in factory F was carried out, using the Snow-ball method, to know their willingness to learn more, basically. When summarizing the data, nine out of ten (90%) said that it increases their production incentives because, the multi-skills factor is helpful to attain their daily production target, in particular, having the colleagues' supportive activities. Practically, how they provide help for their team members can be understood through factory X, which belongs to the similar mother company. Further, the regression analysis result (Table 10) also reveals that the multi-skills factor enhances the mutual support in factory F ( $\beta=.341$ ,  $p<0.001$ ). Then, accomplishment of the work goal increases their financial incentives since factory F calculates production incentives considering the daily target completion (Table 7). Further, three workers who are working in the stand module which consists of 7 workers said that they do not consider about the work load increases and conversely, as suggested by Garbers and Konradt, (2014), minimal members of the team optimises the team-based financial incentives because employees said that under the new work module they can earn more incentives than the previous one (Zig zag module which consists of about 16 members).

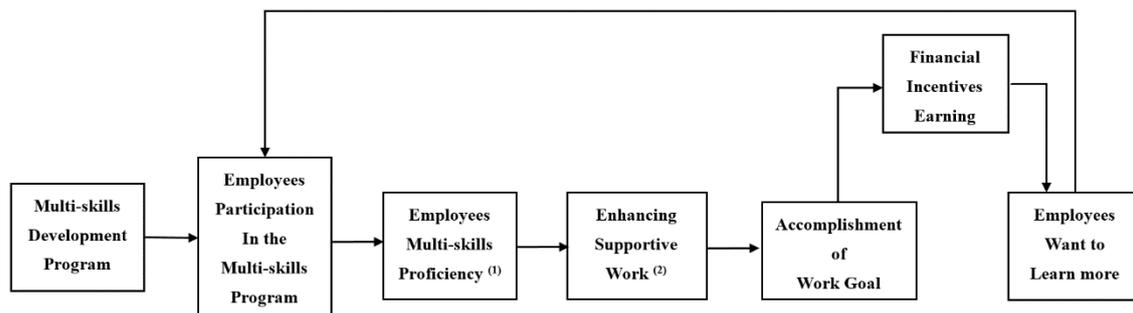
Accordingly, creating a favourable work environment and psychologically

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<sup>25</sup> The percentage is calculated using the answer for Q13: When I get a new skill the organization pays for it. Scales of Strongly disagree, disagree and neither agree nor disagree were aggregated together.

enriching work experience (Potnuru et al., 2018; Neirotti, 2018; Sapada et al., 2018; Ketchum & Trist 1992) through reducing the high workload (Yoon et al., 2016; Klein, 1994), expanding competencies (Felstead et al., 2015) and increasing competence-based payment (Chaparro & Lora, 2017) were not reasons for employees' perception to learn more in the case of Sri Lanka. They use their multi-skills capability to earn more incentives. Yousaf et al. (2014) have argued that workers who are in developing economies are willing to have more extrinsic benefits than intrinsic. This argument is applicable to the Sri Lankan context, too, as a developing economy<sup>26</sup>, since Chandrakunara and Sparrow (2004) say, Sri Lankan workers are more extrinsic reward oriented than intrinsic.

**Figure 15 Multi-Skills Development and Workers' Intention to Learn More in the Sri Lankan Context**



**Sources:** Created by Author. <sup>(1)</sup> Represents extractions from Ketchum & Trist (1992) p.145. <sup>(2)</sup> Refers Morita (2008) and George & Jones (1997).

Thus, based on the above explanation, Figure 3 can be re-arranged relating to the

<sup>26</sup> According to the World Economic Situation and Prospects (2019) which was published by the UN, all countries of the world can be classified into three broad categories: developed economies, economies in transition and developing economies and in which, Sri Lanka has been identified as a developing economy. Retrieved October 10, 2019 from

[https://www.un.org/development/desa/dpad/wpcontent/uploads/sites/45/WESP2019\\_BOOKANE\\_X-en.pdf](https://www.un.org/development/desa/dpad/wpcontent/uploads/sites/45/WESP2019_BOOKANE_X-en.pdf).

Sri Lankan context as above (Figure 15). However, in the study, there were limitations to gather information regarding actual accomplishment of goal and financial incentives earning of employees. Therefore, more research is needed to investigate the statistical relationship which has been presented in Figure 15.

### **7.3.2 Common goal**

In the previous discussions of teams (Owens & Hekman, 2016; Salas et al., 2015; Kozlowski & Bell, 2013; Morita, 2008; Katzenbach & Smith, 1995), the common goal factor has been identified as another vital characteristic of team. Therefore, team-based organizations set a goal on the team-basis. In other words, not like in the traditional work organizations, team-based work organizations set the goal on the team-basis by using the one-team one-goal principle (Owens & Hekman, 2016; Salas et al., 2015; Morita, 2008; Katzenbach & Smith, 1995).

When we consider the study sample, as a management decision, all organizations have set a monthly (factory A, B and G) and daily (factory C, D, E and F) production target in team-basis for each production workplace (Table 7). Therefore, these production targets which have been given for each production workplace can be interpreted as a common goal which should be achieved collectively.

However, Suzuki (2013; 2011) and Morita (2008) have put their concentration on evaluating employees' perception regarding the goal which was set in the team-basis because even though management set a common goal, employees should have understanding about that. If not, organizations cannot achieve their aim through the team-based goal setting. Therefore, the study used measurements of "*I know our team's final goal*", "*In my team, we are jointly responsible for workplace results*" and "*In my team, we have a clear goal to be achieved as a team*" to evaluate the employees' perception regarding the common goal. According to the factor analysis results (Table 8), the common goal factor was able to be extracted from each organization. Even though there are different compositions of items which were used to measure the employees' awareness about the common goal in each organization, reliability values in factory A and B (Table 8), which consist

of the above three items are 0.68 and 0.72, respectively and they can be considered as acceptable measurements (Gliem & Gliem, 2003) to evaluate the factor. The common goal factor in some other organizations consist of two items of them and they have also met with the rule of thumb of Gliem and Gliem (2003) that Cronbach  $\alpha$  coefficients value for two items should be at least 0.40. In the previous research, Cronbach  $\alpha$  coefficients value for the common goal factor which consists of two items: “In my team, we are jointly responsible for workplace results” and “In my team, we have a clear goal to be achieved as a team” in Suzuki (2013), was 0.55.

Then, why are employees in each organization aware about the common goal? The previous research (Garbers & Konradt, 2014; Appelbaum et al., 2000; Parker et al., 2000; Locke & Latham, 1990) has reported that there is a relationship between the team-based goal (common goal) setting and team-based incentives calculation. For example, as discussed in the literature section, Appelbaum et al. (2000) have insisted that team-based incentives are calculated based on the achievement of the team’s production target, in the apparel sector. Further, Garbers and Konradt (2014) suggest that the calculation of the team-based incentives on the accomplishment of team-based goal enhances the employees’ awareness regarding the common goal of their team.

According to a management practice of the manufacturing organizations in Sri Lanka, which was presented in Table 7, although there are organizations in which production incentives are calculated individually, each organization calculates the production incentives considering the achievement of the target of a production workplace. This production target can be interpreted as the common goal. The team-based incentives calculation which can be identified as a management practice which can be seen in the team-based work organization (Bratton & Gold, 2017; Wellins et al., 1991; Orsburn et al., 1990), has been included to the rewarding system of blue-collar level workers by the manufacturing organizations which were surveyed in the study (Table 7). Thus, referring to the suggestion of Garbers and Konradt (2014), it can be supposed that this team-based production

incentive calculation would be a reason for employees' awareness on the common goal in each organization, even though the statistical relationship between incentive calculation and employees' awareness regarding the common goal are unable to be evaluated through this study.

Accordingly, employees' perception of the common goal can be identified as a common characteristic in the manufacturing factories. However, there are differences of understanding between organizations which belong to the garment manufacturing sector and organizations which are included in the other two sectors because the ANOVA results revealed that people who are working in the garment manufacturing organizations are highly concerned about the common goal more than the other two sectors. The way of goal setting would be a reason for the distinction because in the garment sector, production targets are arranged on the daily-basis, instead of monthly-basis which is followed by the other two sectors: porcelain and transformer. As reported by Stansfield and Longenecker (2006), daily production target settings improve the performance. As explained earlier, the organizations which belong to the garments manufacturing sector calculate the production incentives based on the daily performance. Thus, based on the argument of Stansfield and Longenecker (2006), it can be predicted that employees who are working in the garments sector earn more incentives than those who are in the other two sectors and therefore have more intention regarding the goal. Further, it can be assumed that daily target setting is more sensitive than monthly basis, however, further research is needed to confirm the relationship.

Another reason for why garment sector workers possess high intention regarding the common goal can be discussed with the demographic information because, in the garment sector, most of the workers are women, have less than or equal to 10 years of work experience in the present firm and have obtained less than 13 years of school education. As research findings have revealed, awareness of the common goal of female workers is higher than male workers, a person who has less work experience (less than or equal to 10 years) has high intention about the common goal rather than a person who has more work experience (more than 10 years), and

workers who have less education (less than 13 years of school education) have more intention of the common goal rather than more education (more or equal to 13 years of school education). However, these findings contradict previous research (Lee & Yang, 2015; Wu et al., 2015) which has evaluated the relationship between demographic features: tenure and education level, and common goal because they have reported that there are significant positive relationships with the common goal and these demographic features.

In addition, research findings confirmed that workers who have work experience in other work organization(s) have more intention of the common goal rather than workers who have not such a work history. Particularly, a large number of workers in garment sector have more resignation experience from another work organization(s) than workers who have such in the other two sectors. When asked about the reason for the resignation, the most common answer for all sectors or organizations was “inadequate salary”, numerically, it is 44 per cent (in aggregated data set) and in which nearly two thirds of employees are in the garment sector (63 per cent). The finding confirmed the previous discussion of Pushpakumari (2008) because she has also revealed that 58 per cent of workers have left the previous work organization due to financial benefits problems, in the Sri Lankan context. Then, based on this phenomenon, it can be said that the production workers who are highly concerned about their salary level have more awareness of the goal.

Accordingly, these evidences which explain the relationship between employees’ monetary earning related factors and the intention of common goal, confirm the argument of Yousaf et al., (2014) who have been concerned with the nature of employees in the developing economies and Chandrakunara and Sparrow (2004) regarding employees’ attitudes in the Sri Lankan context. Because of, findings explain the employees’ extrinsic reward orientation.

### **7.3.3 Task interdependence**

Task interdependence is another characteristic of the team (Kozlowski & Bell,

2013; Ullah & Park, 2013; Suzuki, 2013; Cohen & Bailey, 1997; Saavedra et al., 1993) and the work design pattern decides the task interdependence of the team (Kumar et al., 2009; Morgeson & Humphrey, 2008; Hertel et al., 2004; Shea & Guzzo, 1987). According to the findings of the current study (Table 7), all factories have arranged their production site work-flow preserving interconnectedness of employees. It means, one worker did not complete the whole production unit and he or she completes a part of the product and passes it to the next workers to fulfil his or her part. This physical task interdependence was identified as the objective task interdependence (Suzuki, 2011).

Through this survey, it was evaluated how employees feel about their dependence on each other. Namely, subjective task interdependence (Suzuki, 2011) is evaluated by using the items of *“I have to obtain information and advice from my colleagues to complete my work”*, *“I have to depend on my colleagues for the start of my work”*, *“In order to complete their work, my colleagues have to obtain information and advice from me”*, *“I need to collaborate with my colleagues to perform my job well”*, *“Team members frequently have to coordinate their effort with each other”* and *“We cannot complete a target unless everyone contributes”*. Because of this, as discussed later, employees’ perception of task interdependence enhances the working level characteristic of team: mutual support. Accordingly, employees’ consciousness was asked, including the words ‘I have to and I need to’ to the questions.

The factor analysis results (Table 8) revealed that the task interdependence factor could be extracted from factories A, B, C and E. Though other organizations (factories D, F and G) have arranged their production workplace considering objective task interdependence, measurements were unable to be used to evaluate employees’ awareness regarding task interdependence. Previously, in the statistical analysis of Van der Vegt and Janssen (2003) and Van der Vegt et al. (2001), they have presented that all items are suitable to evaluate the task interdependence because a factor consists of all the items which were used in the study, and typically, reliabilities values are 0.76 in Van der Vegt et al. (2001) and

0.68 in Van der Vegt & Janssen (2003). In the study, task interdependence factor was extracted from factories A, B, C and E, albeit contents of the factor are in a different pattern organization to organization, however, numbers of items are the same in two. Typically, the task interdependence factor in factory A consists of two items which asked about contribution of team member to complete work and coordination and in factory C they were active and passive nature of information exchange. Also, the factor contents in factory B and E are the same and they consist of two items which evaluate the dependency of work *per se*. To explore the reasons behind this phenomenon, a further qualitative survey should be conducted, in particular, we want to clarify whether there is any procedure which will be helpful to enhance the employees' perception of task interdependence in the organizations where the factor could be extracted.

#### **7.3.4 Team Autonomy**

Team autonomy can be identified as another indispensable characteristic of team (Nijholt & Benders, 2010; Greenwood & Randle, 2007) and decides the typology of work teams and whether a team is autonomous or semi-autonomous or supervised (Lapointe & Cucumel, 2016; Kalleberg et al., 2009). Therefore, in the study, the nature of team autonomy of the Sri Lankan context is discussed by using a considerable portion of this chapter.

Having team autonomy explains the situation in which a team makes the decisions regarding working time, working pace and working method, product quality and member's related tasks such as job rotation in the team. Typical measurements were used to evaluate who makes the decision of them in the Sri Lankan context, referring Morita (2008) and Murakami (1997). However, questionnaire responses of items of team autonomy were unable to be extracted as a factor in the factor analysis which was used all the items and they were excluded from the factory analyses because all items were biased to the decision made by management. In other words, most of the items exhibited the floor effect. Then the pattern of decision making in each organization was evaluated. The findings revealed that

the nature of the decision making seems to be participative or centralized in each organization.

Comparatively, factory G shows a participative nature in decision making rather than all other organizations which were surveyed. As results presented in Figure 14, work pace and work method tasks are above the participation line. It does say that the mean value of work pace (2.32) and work method (2.15) reaches more than 2 and they are higher than in other organizations. Further, transferring team members within a team is also very close to the participative line (1.81). Also, even though the grand mean of factory G is in between line one and two, it takes a higher value and moves toward the participative line more than all other manufacturing organizations. Accordingly, when we consider the decision making patterns of factory G, the work pace and work method are participative, transferring team members within a team is seem to be participative and working time related tasks and quality matter are centralized.

This is because, factory G is a Norwegian affiliated production organization. Norway is a Scandinavian country wherein can be seen the Scandinavian management practices. Basically, in the Scandinavian management practices, employees' participation takes place in decision making (Enehaug, 2017; Stone & Deadrick, 2015; Schramm-Nielsen et al., 2004; Grenness, 2003; Smith et al., 2003). According to the training and development manager of factory G, occasionally managerial level workers are sent to the Mother Company in Norway to get training. Therefore, it can be assumed that there may be an effect of such training to enhance the employees' participation in decision making. There, however, is a need to investigate much more about the influence of the Scandinavian management style on the manufacturing organization in Sri Lanka and its effect on decision making.

In Factory A, the work pace task is decided by management discussing with workers. As results show in Figure 14, its value (2.02) is over the participation line. Further, it can be supposed that participative decision making happens regarding work methods since the mean value of the work method (1.93) is very

close to the participation line. Accordingly, factory A also presents the participative nature in decision making to some extent. Bodwell (2005) highlights that factory A has changed their traditional way of management and organizational design through introducing team-based work practices in 2001. It, however, was unable to confirm that there is team autonomy as an inevitable characteristic of team (Nijholt & Benders, 2010; Greenwood & Randle, 2007) in factory A. According to the study findings (Table 7 and Appendix 11), the organizational structure of factory A consists of large numbers of top-down management hierarchies with centralized decision making as was in the traditional work organizations (Bratton & Gold, 2017). However, according to a managerial level worker who provided assistance to this survey, the factory continuously conducts a weekly production meeting. Workers have a chance to discuss matters which affect their work, in particular, production target (work pace), overtime work (finishing time), work methods and quality matters are discussed with workers. However, the starting time of work is fixed and transferred members are decided by the supervisor of each production workplace. Some of these practices can be considered as reasons for the participative findings. However, they have not presented as much participative nature as expressed by management.

An assistant manager of the human resources department in factory F explained that they are practicing teamwork and team members have been assigned decision making power on their task. For that, the organization has been carrying out an empowerment program by abolishing the supervisory workers level. According to his explanation, workers can decide the starting time of work after the end of their usual team meeting, workers can decide their way of work under the Stand Module (workers can select the machine operating way as sitting or standing) and workers have the right to decide about transferring members within the team. Further, quality checking is also a responsibility of workers. However, no substantial evidence could be found from the survey to support success of these management decisions. If workers actually practice those autonomous work tasks, there should be results to prove the team autonomy in this study. The real situation in factory

F is neither team autonomy nor employee participation in decision making because, the centralized nature in decision making is so powerful in factory F. According to survey results, it seems that work methods and transferring team members within team are the only tasks which move to the participative line. Typically, their mean values are 1.88 and 1.79 (Figure 14) respectively, but not a mean value  $\geq 2$ . As a whole, nearly each mean value presents the centralized nature in decision making. This result supports the findings of Dora et al. (2014) as a TPS based manufacturing organization. They have revealed that participation decision making of employees cannot be seen in an organization which uses TPS. Conversely, employees' participation in decision making is a vital characteristic of TPS based production floors (Lantz et al., 2015; Wilson, 2010; Forza, 1996). In the Sri Lankan context too, Wickramasinghe and Wickramasinghe (2011) have revealed employee participation in decision making in the organizations which are based on TPS. Accordingly, these results contradict the findings of previous research.

Comparatively, factory B, C, D and E have presented a centralized nature of decision-making. The organizational charts of factory B, C, D and E (Appendix 12-15) consist of a large number of managerial levels. Therefore, they were named as the hierarchical work organizations (Table 7). In which, factory B is a Japanese subsidiary. Employee participation in decision-making is a characteristic of Japanese organizations in the motherland (Sagi, 2015; Itami et al., 1993) as well as outside of Japan (Elmuti & Kathawala, 2011; Noorderhaven et al., 2007). However, this is not applicable for each and every Japanese affiliation. Diefenbach (2005) has explained that employee participation cannot be seen in the Japanese work organizations outside of Japan. This claim was supported by the results of the experiment in the Sri Lankan context since, in factory B, it is hardly found that there exist supportive proofs to confirm the employee participation in decision making. As Nishantha (2006) also found that they are still practicing centralized decision making, while saying there is teamwork.

Accordingly, there are not any autonomous work practices in the organizations

that were investigated, even though they state that there are teamwork practices. As a whole, it seems that most decisions are made by the management of the manufacturing organizations in Sri Lanka. That is, centralized decision makings still occur in work organizations in Sri Lanka as it was in the traditional work organizations (Bratton & Gold, 2017). However, some organizations are creating a favourable organizational environment to develop autonomous decision making like employees' empowerment as a precondition of team autonomy (Morita, 2008). This is because, it could be found that there are manufacturing work organizations in Sri Lanka where the decision-making patterns on employees' work tasks are moving to the employees' side. Thus, the decision making would not be too much centralised to the management in the work organizations in Sri Lanka as has been discussed by previous research (Jayawardana et al., 2013; Kumarasighe & Hoshino, 2010; Chandrakunara & Badhwar, 2005; Chandrakunara & Sparrow, 2004; Kumarasighe & Hoshino, 2003; Gunasekara, 1999; Wijewardena & Wimalasiri, 1996; Weathersby, 1993; Nanayakkara, 1992).

### **7.3.5 Mutual support**

Mutual support is another characteristic of the team (Gallie et al., 2012; Morita, 2008; Cohen & Bailey, 1997; Wellins et al., 1991; Trist et al., 1987) which can be seen in the working level of the team (McIntyre & Salas, 1995). Therefore, mutual support is considered as the dependent variable of the teamwork models and other characteristics of team foster the supportive activities. However, this relationship is discussed in the later part of the section with the confirmation of teamwork in the Sri Lankan context. Hence, the nature of mutual support *per se* is reported in the following.

Particularly, in the study, the existence of tangible assistance among the workers is evaluated by using active and passive measurements such as "*If I got into difficulty at work, my section members help me*", "*I help my workmates when they have work problems on the line*", "*If any problem occurred on my work, it is resolved in discussion with my colleagues*", "*On my day off, when I finish my daily*

*work, I help someone who is not finished” and “Members of my team share information with other team members about our work”*. In other words, these measurements asked whether they actually support each other in the workplace. Factor analysis revealed that these measurements are suitable to evaluate the one construct because measurements all together have good reliabilities in factories G and C and acceptable reliabilities in other factories (George & Mallery, 2003).

Furthermore, mutual support is a common characteristic which could be extracted from all organizations which were surveyed in this study. It suggests that the tangible assistances are taking place in all the organizations, though the strength of mutual support varied organization to organization because the findings of the study particularly revealed that there is a significant difference between factory C and B regarding the strength of the mutual support practices. However, exploring the reasons for why mutual support is strong in factory C rather than B is not the objective of the present study because the confirmation of the mechanism of teamwork in the manufacturing organizations which say that they have been practicing teamwork in their production process is the main purpose of the study.

Notwithstanding, as a supplementary analysis, mutual support was compared with the different groups which were created based on the demographic feature and the results unveiled that the mutual support takes distinct natures when considering the demographic features: tenure and age levels. Shin et al. (2018) and Baeriswyl et al. (2017) have found out that tenure and age levels negatively relate with the mutual support. According to the evidences, a person who has less work experience (less than or equal to 10 years) has high intention about the mutual support rather than a person who has more experience (more than 10 years) in the same organization and a person who belongs to less than the 30 year age level is aware more about the mutual support rather than a more than 31 year old. Practically, in factory C, comparatively most of the people have less work experience as a newly started manufacturing organization and the percentage of employees who belong to less than or equal to 10 years of work experience is higher than other organizations. Also, most of the workers are in less than the 30

year age level than other organizations. As reported by Bamberger (2009), workers who have less work experience seek help from others in the workplace. Therefore, workers may carry out their work exchanging support by using what they know. Regarding the relationship, however, contradictory point of views also exist in the academic discussions because age (Suzuki, 2013) and tenure (Chae et al., 2019) have also positive relationships with the mutual support. Furthermore, these demographic features, however, have not made significant effects on the mutual support as the dependent variable.

#### **7.4 Teamwork Practices in the Sri Lankan Context**

The confirmation of teamwork practices of the manufacturing organizations in Sri Lanka which say that they have been practicing teamwork practices is the main objective of the study. Having the objective, the characteristics of team: multi-skills, common goal, task interdependence, team autonomy, and mutual support, were discussed, separately, without concerning the relationships of them, until now in this section.

As the literature has suggested and confirmed, the mutual support in the work team can be explained by using other team characteristics as follows.

Firstly, as Morita (2008) and George and Jones (1997) have insisted, multi-skills is a factor which is helpful to improve mutual support in the work teams because, as the results show in Table 9, factories B and F provide substantial evidence regarding the relationship. The multi-skills factor in factories B and F have a positive relationship with mutual support and improve supportive activities of employees (Table 10) whereas the relationship has not been discussed much in the preceding research. Therefore, this is a beneficial discovery for a work organization which hopes to establish multi-skills development training methods. However, employees' capability to perform more than one task, namely, multi-skills, was unable to be measured through the survey, relating to other manufacturing organizations.

Next is the relationship between the common goal and mutual support. As noted

by Suzuki (2013; 2011), Chen et al. (2009) and Wageman and Baker (1997), the worker's common goal sense and the mutual support has a positive relationship because the results which have been shown in Table 9 confirm this relationship between mutual support and common goal regarding the Sri Lankan context. The regression analysis result (Table 10) shows that the common goal factor which was extracted from the aggregated data set has a significant effect to mutual support ( $\beta=.587$ ,  $p<0.001$ , adjusted  $R^2=.34$ ). It says that the employees' perception of common goal plays a substantial role in the enhancement of mutual support among workers. Also, when considering factories separately, the common goal sense in factories B, C, E and G have similar influence on the mutual support. Meanwhile, the results in factories A, D and F present the contradictory view relating the argument of Suzuki (2013; 2011) and Wageman and Baker (1997) because the common goal feature in factories A, D and F is unable to be used to predict mutual support, in fact they are not significant (Table 10). This says that having common goal perception does not necessarily enhance the mutual support.

Task interdependence can also be used to predict mutual support. Most of the previous discussions have highlighted the relationship between mutual support and task interdependence (Chen et al., 2009; Kumar et al., 2009; Somech et al., 2008; Bachrach et al., 2006; Ramamoorthy & Flood, 2004; Wageman & Baker, 1997; Kaggundu, 1981). They describe that task interdependence involves building supportive work practices among workers. Supporting their points of view and confirming the previous findings of Hu & Liden (2015; 2011), Suzuki (2013) and Van der Vegt & Van de Vliert (2005), the results of the present study (Table 9) also have revealed this positive relationship. Obviously, employees' awareness of task interdependence in factories A, B and C have indicated significant increases of mutual support (Table 10). It means that when employees feel their dependency, they support other members in his or her workplace, for example, when people feel importance of information sharing, they share information, actually. Whereas denying the fact that was revealed by previous scholars (Hu & Liden, 2015; 2011; Suzuki, 2013; Van der Vegt & Van de Vliert, 2005), task interdependence in factory

E has not a significant incremental effect on mutual support.

The literature (Hüffmeier & Hertel, 2011; Kalleberg et al., 2009) has confirmed that team autonomy is another factor which provides an incremental effect to the mutual support of a team. Obviously, however, the present study has not found that any organization which has given substantial decision making power to the workers level in the Sri Lankan context because almost all decisions are made by managerial level workers. As revealed in the discussion part of team autonomy, the manufacturing organizations use participative or centralized decision making. Therefore, the relationship between team autonomy and mutual support was unable to be evaluated.

Accordingly, when we examine the relationships between team characteristics, there are different patterns of model (Table 10) which consist of independent variable(s) which creates and does not create incremental effect to the mutual support of the workplaces. In chapter 3, considering the relationship of the characteristics of the team, an ideal teamwork model for autonomous team was created (Figure 5). Also, a semi-autonomous teamwork model (Figure 6) was set based on the practical usage of teamwork of any organization which has given partial decision making power to the work teams. However, a manufacturing organisation was unable to be found in the Sri Lankan context which has established autonomous work practices. In the typology of team of Lapointe and Cucumel (2016) and Kalleberg et al. (2009), a team which has not autonomy has been classified as a supervised team. Thus, based on the theoretical discussions, the predictable teamwork model of a supervised team was conceptualized (Figure 7). The survey result (Table 10) revealed that the model in factory B seems to be consistent with the predictable teamwork model of the supervised teams, because the regression model consists of all the characteristics of the predictable teamwork model and, comparatively, it has the higher explanation capacity of mutual support. Therefore, model fitness and causal relationships of variables were evaluated by using SEM. As convinced by Hair et al. (2019), fit indices as an output of SEM reveal “the accuracy of a proposed theory” (p.605), and statistically significant

evident paths depict the causal relationships of the variables. In the current study, teamwork models are conceptualized as the proposed theory which has not been paid a lack of attention in the literature. Fit indices of the model in factory B could be accepted as a well-fitting one since all typical values met with general acceptance. It does mean that accuracy of the proposed theory: teamwork model of supervised teams, was evaluated by the present study. Further, statistically significant evident paths: multi-skills → mutual support, common goal → mutual support and task interdependence → mutual support, which appear in the estimated model (Figure 13) explain the causal relationship.

When we consider regression results, factory A and C also revealed that considerable explanation capacity of mutual support. Thus, although they are not consistent with any conceptualized model of the study, model fitness and causal relationships of variables were calculated by using SEM. The results showed that fit indices are below the general acceptances and some of the paths were insignificant. Accordingly, these results contend that the existence of teamwork was able to be found out only from factory B. The findings support the argument of Berggren (1993), saying, “Teamwork certainly played a central role in the Japanese management system” (p.7), because factory B is a Japanese affiliated porcelain production organization and uses some Japanese management practices in their work process (Nishantha, 2006).

## **Part III**

### **Chapter 8**

#### **Conclusion, Implications and Research Limitations**

##### **8.1 Introduction of the Chapter**

Chapter 8 is organized to present the conclusions of the study, implications, research limitations and future research opportunities. The implications part consists of both theoretical and managerial implications of the current study.

##### **8.2 Conclusion**

As pointed out in chapter one, the present study aims to confirm the existence of teamwork in the manufacturing organizations which say they have been practicing teamwork in their production process.

As the basis of the study, the ideal teamwork model was developed in chapter three by using the characteristics of team: multi-skills, common goal, task interdependence, team autonomy and mutual support, which have been included in most of the definitions of team (Table 2) and previous discussions of production teams. Further based on the typology of team, the predictable teamwork models were conceptualized re-arranging the ideal teamwork model. Based on the literature of teamwork, a work organization which practices teamwork has introduced team-based management practices, such as multi-skills based training and development, team-based goal setting and rewards calculation, setting work flows concerning the interconnectedness of task and arranging the organizational structure assigning the decision making power to the workers level. A purpose of these team-based management practices is the enhancement of supportive activities among the workers of each team by using the multi-skilled capability of workers, employees' perception on their common goal and task interdependence and team autonomy and this mechanism is considered as the teamwork.

According to the findings, team characteristics could be measured in the production organization in the Sri Lankan context. However, each characteristic

of team was unable to be measured through all the organizations. That is, when considering organizations separately, there are different kinds of compositions of team characteristics.

Regarding team autonomy, practically, no organization has assigned decision making power regarding working time, working pace, working methods, transferring members within workplace and quality matters. Although there are some participative practices, they still seem to be based on the centralized-decision making pattern which exists very often in the organizations which use the traditional work methods. Precisely, autonomous or semi-autonomous work practices were unable to be evaluated in the Sri Lankan context through this study and therefore, teamwork models for autonomous teams and semi-autonomous teams also had to be set aside.

The remaining one was the predictable model for teamwork in an organization which consists of supervised teams: a team which has no autonomy. The results confirmed that there is an organization, a Japanese affiliated company, which was consistent with the predictable teamwork model for the supervised teams. In other words, Japanese subsidiary can be introduced as an organization which consists of the supervised teams. Further, the mechanism of teamwork was statistically significant and revealed as the acceptable model. Typically, team features: multi-skilled capability of workers, employees' perception on their common goal and task interdependence, altogether enhance the supportive activities among the workers. In other words, multi-skills, the common goal and task interdependence make direct effects on the mutual support. Therefore, as a conclusion of the current study, in the Sri Lankan context, the existence of teamwork was able to be confirmed only in the Japanese affiliated organization. And also, the organization provided an answer for the research question of the study, however, in a limited state, because team autonomy was unable to be measured. Moreover, the results provided substantial evidences to consent with what the organization claims that "we have been practicing teamwork".

Even confirmation of the model which explained the mechanism of teamwork was

impossible regarding other organizations, agreeing with preceding studies; research findings of some organizations revealed that multi-skills, common goal and task interdependence are the antecedent of mutual support. Meanwhile, there are inconsistencies, too, in this regard. As well, confirmation of the team characteristics conclude that the manufacturing organizations in Sri Lanka are in a developing stage of teamwork. In other words, it can be said that the manufacturing organizations in Sri Lanka are in a switching or transition stage to the contemporary organizational context, that is, to the team-based organization.

### **8.3 Implications**

#### **8.3.1 Theoretical Implications**

Although many things remain to be understood about the mechanism of teamwork, the present study provides important initial implications for theory. As the major theoretical implication, the confirmation of the statistically significant and acceptable teamwork model for a supervised team can be pointed out. Particularly, in the scholarly writings which have been published to date, it was very difficult to find out, neither statistically significant nor insignificant, a model which has included multi-skills, common goal and task interdependence, as the independent variables, to evaluate relationship with the mutual support as the dependent variable. In other words, the model that was not confirmed by the previous studies was able to be discovered by the current study.

Furthermore, existing theories of teamwork were extended to evaluate the teamwork in the Sri Lankan context which is considered as a developing economy. As reported by Andreassi et al. (2014), Budhwar and Debrah (2001) and Kanungo and Jaeger (1990), the origin of most of the management theories and techniques are in developed countries. This is also applicable to the teamwork literature because, most probably it has concerned the organizations in the developed nations by the previous studies. However, even some previous research (Andreassi et al., 2014; Bartlett et al., 2002) has insisted that there are limitations to adopt those theories in the developing countries, the study result- the confirmation of the

mechanism of teamwork in the organization which consists of supervised teams (teamwork model) - suggests that there are plenty of opportunities to stretch their teamwork studies in Sri Lanka, too. That is, the results of the current study suggest that there is a possibility to apply teamwork discussions which have been reported regarding the developed countries to the developing countries, too.

Another theoretical contribution of the study relates to the confirmation of previous discussions regarding the relationship between mutual support and the employees' perception of common goal (Hu & Liden, 2015; 2011; Suzuki, 2013; Van der Vegt & Van de Vliert, 2005) and task interdependence (Suzuki, 2013; 2011; Chen et al., 2009; Wageman & Baker, 1997).

Moreover, another theoretical contribution can be pointed out regarding multi-skills and the employee's awareness of the common goal. Regarding multi-skills, although it has not been concerned by much research, the statistical confirmation of the relationship between mutual support and multi-skills proves that the multi-skills factor is a vital characteristic of team. However, when we consider the different points of view of team (Table 2), there are studies such as Nijholt and Benders (2010) and West and Markiewicz (2008) which have not included multi-skills factor. Further, even though it was not the main aim of the present study, subsequent analysis and research found that, instead of psychological gains (Neirotti, 2018; Sapada et al. 2018; Morita, 2014; Ketchum & Trist, 1992), earning more monetary reward is an objective of having more skills of the blue-collar level workers. Therefore, this would be a contribution for scholars who have research interest of employees' training and development, particularly, workplace learning (Nakahara, 2017).

Regarding the common goal, although Garbers and Konradt (2014) have considered the relationship between employees' common goal intention and team-based incentives, they have not taken into account the relationship between ways of goal setting (daily-basis and monthly-basis) and employee's perception of the common goal. Meanwhile, the current study result suggests that the employees who have a daily-based common goal have more awareness regarding their goal

rather than a monthly-based goal. For instance, in the current study, workers who are in the garments manufacturing sector which uses the daily-based goal setting have more awareness of their common goal rather than the other two sectors which use a monthly-based goal setting.

### **8.3.2 Practical Implications**

The main practical implication of the current study can be explored with the confirmation of the teamwork in the manufacturing organization in the Sri Lankan context, in the Japanese affiliate. The results suggest that importance of multi-skills capability and employees' perception of common goal and task interdependence enhance the working level characteristic: mutual support. At the same time, although statistical analysis was not performed, the findings discussed the managerial practices which relate to the antecedents of mutual support. That is, it is understood that the multi-skills based training and development is helpful to expand employees' competencies, team-based goal-setting and team-based reward calculation has capability to increase employees' perception of the common goal and work designing which has considered employees interconnectedness is helpful to enhance the employees' task interdependence awareness, and are discussed regarding each organization. As was discussed in chapter one, work organizations in Sri Lanka have been trying to redesign their workplace by introducing a new form of workplace (Kulasooriya & Chalapathi, 2014; Silva et al., 2011). Therefore, as a role model, they can follow the teamwork and team-based management practices in the factory in which the teamwork was confirmed. Also, not only the confirmation of the teamwork but regression analysis results of other organizations also provided evidences regarding the enhancement effect of the worker level characteristics of team: multi-skills, common goal and task interdependence, to the mutual support, although each characteristic was unable to be measured in other manufacturing organizations as was in the Japanese affiliate.

In the meantime, the management practices in the organizations in which the

significant effect of the employees' multi-skills capability to the mutual support was confirmed were different because factory B uses a formal OJT method such as job rotation. Instead, factory F has established an in-site training centre (MSD unit) as a method of off-JT. Nevertheless, the multi-skills capability enhances the mutual support of both organizations. Therefore, any organization willing to expand employees' skills can follow whichever method. Further, having facilities to expand competencies of the employees would be an inevitable matter regarding the Sri Lankan context. As reported by the Census and Statistics Department of Sri Lanka, educational level goes up remarkably, year by year (DCSSL, 2017) more than ever before. Although it has not confirmed the statistical relationship between education level and obtaining multi-skills, the study suggests the organization better to create favourable facilities to expand the skills of those educated workers and finally, it would be helpful to create a skilful workforce in Sri Lanka.

Moreover, this article's findings may have important practical implications for the organization which hopes to develop autonomous work practices in their organization. Practically, based on the research findings and process, organizations can understand their prevailing situation on the decision making. Here, some organizations partially have admitted to developing autonomous work practices by introducing an antecedent step of team autonomy such as practicing empowerment and participative work practices.

#### **8.4 Research Limitations and Future Studies**

There are a few limitations and matters which require a greater dialogue in future research.

Firstly, these finding cannot be generalized since, only 2 manufacturing organizations for the qualitative survey and 7 manufacturing organizations for the quantitative survey were surveyed. A large sample is desirable to confirm results and to get a general idea. In future experiments, research should consist of more manufacturing organizations to the sample.

The second limitation involves items which were used to evaluate team characteristics. There are factors which have low Cronbach  $\alpha$  coefficients. Therefore, to achieve a satisfactory level of reliability values, items have to be increased (Gliem & Gliem, 2003). Particularly, reliability values of measurements of multi-skills is not large enough to make a conclusion as the study measured the multi-skills factor, properly.

The third limitation involves the interpretation and explanation of statistical analyses results. Even though teamwork was able to be confirmed in factory B, it is arguable why mutual support is lower than factory C and is similar with other factories, thus further research is wanted to be arranged for in-depth analysis and discussion regarding this matter. However, some clarifications can be provided through the results of the present study as a recommendation for factory B. As pointed out above, demographic differences of tenure and age levels were considered as the predictable reasons behind this, particularly, regarding differences between factory C and B. Other than that, supervisory intervention is another foreseeable issue which is behind the scenario. As found in the qualitative survey in factory Y, intervention of managerial level workers, particularly supervisors, makes obstruction to practice the supportive activities in the worker's level, and previous research has also suggested that a supervisory level worker should establish a favourable workplace climate to carry out supportive works among the workers (Van der Rijt et al., 2013; Bamberger, 2009). Practically, supervisory intervention may be higher in factory B rather than other organizations because factory B uses a long top-down organizational arrangement with two supervisory levels: supervisor and junior supervisor, which cannot be seen in other organizations. Therefore, future research should evaluate the relationship between the supervisory level intervention and mutual support regarding the Sri Lankan context, statistically. As well, based on the results, it was unable to make a conclusion about which organization is better comparing organizations which have had high or low mutual support and organizations in which the teamwork model could be confirmed, and other organizations in which

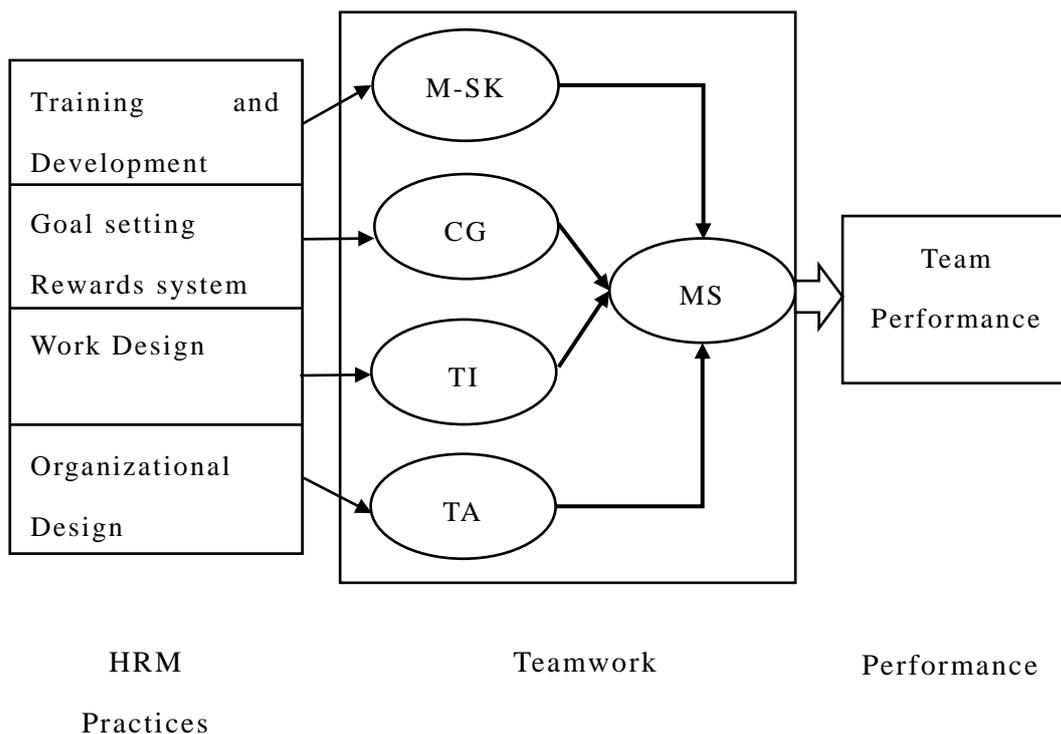
the teamwork model could not be confirmed. To provide an answer for this question, the relationship between mutual support and performance has to be evaluated in the team or organization levels. Moreover, as reasons behind the existence of teamwork, it was assumed that the management practices create impacts to the characteristics of team. That is, it was assumed that the multi-skills factor depends on the multi-skills promoting training program, common goal depends on the team-based targets and incentive setting, and task interdependence based on work flow which is arranged keeping the interconnectedness of work. However, it was difficult to provide statistical evidences to prove these scenarios. The way of goal-setting was used to explain the different frequencies of employees' perception of a common goal in the manufacturing organizations in Sri Lanka, particularly the difference between sectors. Multi-level analysis is needed to be carried out to evaluate the effect of management practices in different originations. However, the number of organizations of the study (number of organizations = 7) is insufficient to handle multilevel analysis to investigate the differences since, Hair et al. (2019) have suggested that at least 30 groups (here, manufacturing organizations) are wanted to carry out multilevel analysis. Therefore, future research explores the relationship between management practices and the characteristics of team, statistically, increasing the number of firms. And, performance of team should also be evaluated to value the teamwork model and management practices. In sum, the process which has been shown in Figure 16 is hoped to be confirmed in future research.

Also, though the multi-skills factor could not be evaluated in factories A, C, D, E and G, mutual support takes place in each organization. One argument is aroused regarding this matter. The point in question is how workers can support his or her colleague without knowing others' jobs. If each worker of any workplace performs a completely identical task, multi-skills may not be required to help others and in such a situation, it can be assumed that, if someone got into difficulty at work or wanted more information to fulfil his or her task, other members can provide assistance by using what they know even if they have knowledge about only one

task, regardless of whether he or she has knowledge about various kinds of task. Therefore, qualitative research has to be arranged to evaluate whether employees have or not knowledge about other's job tasks and how mutual support happened in the workplace, practically.

Moreover, mutual support in factory D exists without any effect from team characteristics. Employee's intention of the common goal has not created significant effect on mutual support in factory D. It means that there are other predictors to explain mutual support in factory D. In future, investigations should concentrate on finding out those other factors, too.

**Figure 16 A Predictable Relationships between HRM Practices, Teamwork and Performance of Teamwork**



**Note:** M-SK- Multi-skills, CG-Common goal, TI- Task Interdependence, TA- Team Autonomy, MS-Mutual support.

**Source:** Created by author.

Another thing which may relate to the mutual support is cultural aspects because,

as reported by Love and Dustin (2014), people who are in a collectivistic culture are more cooperative than in individualist. For example, Japan, which has become a role model for much teamwork research, is identified as a collectivistic country (Sato, 2009). Not only mutual support, but as noted by Dierdorff et al. (2011), collectivistic people also have more intention of the common goal. Regarding Sri Lanka, Dissanayake and Semasinghe (2014), Ralston et al. (2014) and Rathnayaka (2014) have recognized the collectivism as a characteristic of Sri Lankan society. Therefore, future research has to be organized to clarify this cultural effect on the team characteristics. It would be helpful to distinguish the effect of culture and managerial practices on the teamwork.

Moreover, in this study, even organizations that have set objective task interdependence, it was impossible to find out the reason for why it was unable to evaluate the task interdependence awareness of employees in some organizational contexts. To clarify this matter, qualitative research should be carried out in a future study. Additionally, management practices which may improve subjective task interdependence were not discussed theoretically or practically and it has to be addressed in future research.

As well, the findings revealed the female workers have more intention regarding the common goal rather than the male workers. A reason, however, behind this scenario was unable to be found. Therefore, this also has to be discussed in future research.

Finally, future research will address employees' willingness to accept responsibilities on autonomous decision making practices since, in the preceding discussions, Chandrakunara and Sparrow (2004) have insisted that Sri Lankan workers prefer to work on the instructions from their superior rather than make decisions by themselves. Not only employees' willingness, but managerial level desire to implement autonomous work practices, also has to be discussed. Morita (2008) and Appelbaum and Batt (1994) have argued that managerial level workers' willingness to relinquish the authority is another problematic situation that has to be faced by any organization which tries to introduce team autonomy since,

managerial level workers are reluctant to assign their power to the workers level. Thus, this willingness of managerial level workers also should be evaluated in future research regarding the Sri Lankan context.

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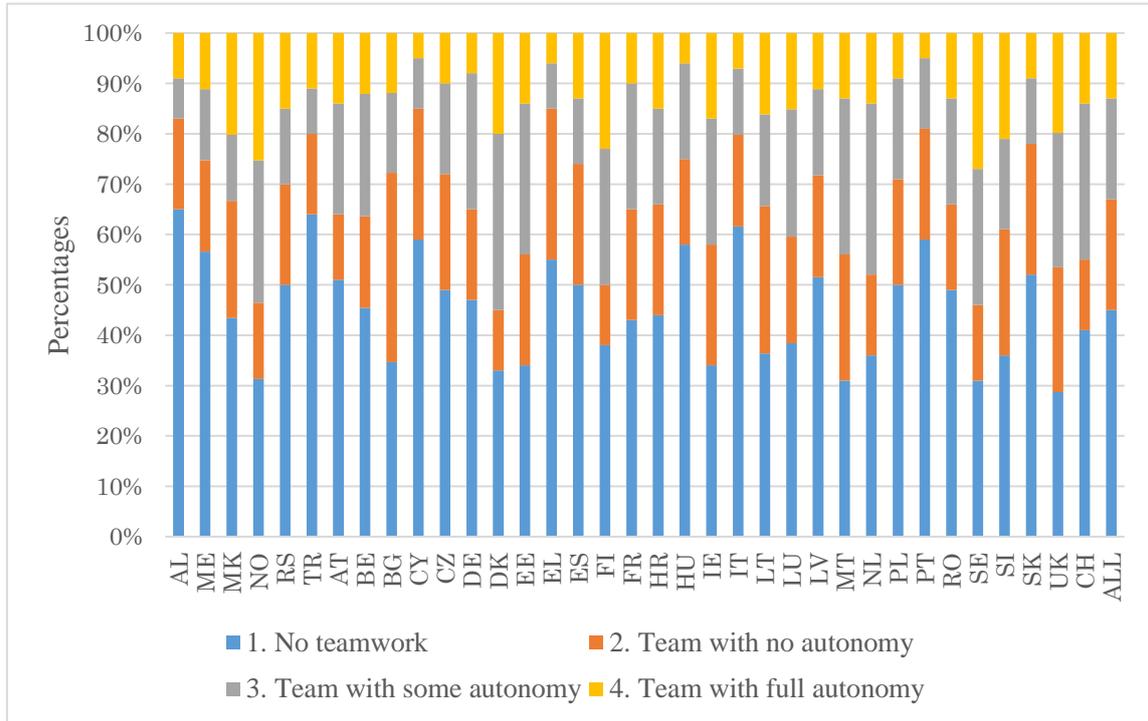
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## Appendix 1

### Classification of Teams based on the Autonomy Level



**Source.** [https://www.eurofound.europa.eu/data/european-working-conditions-survey?locale=EN&dataSource=EWCS2016&media=png&width=740&question=y15\\_Q88&plot=euBars&countryGroup=linear&subset=agecat\\_3&subsetValue=All](https://www.eurofound.europa.eu/data/european-working-conditions-survey?locale=EN&dataSource=EWCS2016&media=png&width=740&question=y15_Q88&plot=euBars&countryGroup=linear&subset=agecat_3&subsetValue=All).

AL	Albania	DK	Denmark	LV	Latvia
ME	Montenegro	EE	Estonia	MT	Malta
MK	Macedonia	EL	Greece	NL	Netherland
NO	Norway	ES	Spain	PL	Poland
RS	Serbia	FI	Finland	PT	Portugal
TR	Turkey	FR	France	RO	Romania
AT	Austria	HR	Croatia	SE	Sweden
BE	Belgium	HU	Hungary	SI	Slovenia
BG	Bulgaria	IE	Ireland	SK	Slovakia
CY	Cyprus	IT	Italy	UK	United Kingdom
CZ	Czech Republic	LT	Lithuania	CH	Switzerland
DE	Germany	LU	Luxembourg	All	All countries

## Appendix 2

# Questionnaire Survey on Teamwork

August 2016

I am Manjula Wanninayaka and a student at Kansai University of Japan. I am examining teamwork practices in your work place. Since, I expect your kindly participation to this study by answering the following questions.

- ◆ Please complete all the questions.
  
- ◆ There is no any known risk for responding. In order to ensure that all information will remain confidential, please do not include your name.
  
- ◆ If you want any additional information please contact me at the number listed below.

Thank you for taking the time to assist me in my educational endeavour.

Graduate School of Sociology  
Kansai University  
Japan

*Address in Sri Lanka:*

Tel: 070\*\*\*\*\*

What is your team Name or Number?

(Optional) .....

**There are various statements about your work and team. PLEASE TICK the suitable one which reflects your feelings.**

Q1. I strongly identify with the other members of my work team.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.                                      5. Strongly agree.

Q2. I am a member of this work team.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.                                      5. Strongly agree.

Q3. I can perform more than one task in the team.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.                                      5. Strongly agree.

Q4. Team members of my team know each other's job.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.                                      5. Strongly agree.

Q5. I often cover absentee work in my team.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.                                      5. Strongly agree.

Q6. I carry out the same task over and over again.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.                                      5. Strongly agree.

Q7. I want to learn as many jobs as possible.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q8. When I get a new skill organization pay for it.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q9. I develop my skills mainly by using on the job training facilities.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q10. I know what our team's final goal is.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q11. I have to obtain information and advice from my colleagues to complete my work.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q12. I have to depend on my colleagues for the start of my work.

- |                       |                   |                                |
|-----------------------|-------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.      | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree |                                |

Q13. In order to complete their work, my colleagues have to obtain information and advice from me.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q14. We can set our own working pace.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q15. We can decide when to start a piece of work.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q16. We can decide when to finish a piece of work.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q17. We can choose the methods to use in carrying out our works.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q18. If I got into difficult at work, my section members help me.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q19. I help my work mates when they have work problems on the line.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q20. Members of my team share information with other team members about our work.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q21. In the day of, when I finish my daily work, I may help someone who is not finished.

- 1. Strongly disagree.
- 2. Disagree.
- 3. Neither Agree Nor Disagree.
- 4. Agree.
- 5. Strongly agree.

Q22. I want to be like my supervisor.

- 1. Strongly disagree.
- 2. Disagree.
- 3. Neither Agree Nor Disagree.
- 4. Agree.
- 5. Strongly agree

Q23. I satisfy with my supervisor's way of supervision.

- 1. Strongly disagree.
- 2. Disagree.
- 3. Neither Agree Nor Disagree.
- 4. Agree.
- 5. Strongly agree.

**Please let me know about yourself.**

Q24. How long have you been working for this company? Please write down.

Year..... Months.....

Q25. Before you join this company, have you worked for another company?

- 1. Yes
- 2. No

Q26. If yes, why did you leave from those factories? Select the most suitable reason.

- 1. Problem with supervisor
- 2. Inadequate salary
- 3. Monotony of work
- 4. Other reason (s).....

Q27. What is your sex? PLEASE TICK.

- 1. Female
- 2. Male

Q28. What is your age? PLEASE TICK.

Less than 16		41-45	
16-20		46-50	
21-25		51-55	
26-30		56-60	
31-35		61-65	
36-40		66 and above	

Q29. Please select if you have any of these educational qualification. PLEASE TICK.

Less than G.C.E. O/L		Following a Degree	
Followed G.C.E. O/L		Degree Completed	
Followed G.C.E. A/L		More than First Degree	
Passed G.C.E. A/L		Other: Please write in	

Q30. Please write down here your average monthly salary.

.....

**Thank you very much for completing this questionnaire.**

**Results of the Pilot Survey (Team Characteristics)**  
**Mean Values, Standard Deviations (SD) and Cronbach  $\alpha$**

Q. No.	Items	N=49		
		Mean	SD	$\alpha$
<b>Multi-skills</b>				
3	I can perform more than one task in the team.	3.69	1.1	.72
4	Team members of my team know each other's job.	3.82	1.0	
5	I can cover absentee work in my team.	3.44	1.2	
<b>Common Goal</b>				
10	I know what our team's final goal is.	4.2	.76	
<b>Task Interdependence</b>				
11	I have to obtain information and advice from my colleagues to complete my work.	4.08	.68	.60
12	I have to depend on my colleagues for the start of my work	4.33	.77	
13	In order to complete their work, my colleagues have to obtain information and advice from me.	4.4	.74	
<b>Team Autonomy</b>				
14	We can set our own working pace.	3.73	.97	.89
15	We can decide when to start a piece of work	3.84	.92	
16	We can decide when to finish a piece of work.	3.81	.97	
17	We can choose the methods to use in carrying out our works.	3.86	.91	
<b>Mutual Support</b>				

18	If I got into difficult at work, my section members help me.	4.02	.88	.68
19	I help my work mates when they have work problems on the line.	4.18	.81	
20	Members of my team share information with other team members about our work.	4.28	.95	
21	In the day of, when I finish my daily work, I may help someone who is not finished.	3.56	1.32	

### Results of the Pilot Survey (Other Questions)

#### Mean Values, Standard Deviations (SD)

Q. No.	Items	N=49	
		Mean	SD
1	I strongly identify with the other members of my work team	4.44	.61
2	I am a member of this work team.	4.63	.48
6	I carry out the same task over and over again.	2.71	1.0
7	I want to learn as many jobs as possible.	4.02	.78
8	When I get a new skill organization pay for it.	3.81	1.03
9	I develop my skills mainly by using on the job training facilities.	2.52	1.16
22	I want to be like my supervisor	4.12	.97
23	I satisfy with my supervisor's way of supervision.	3.42	1.32

**Frequencies**

Q24. How long have you been working for this company? Please write down.

Less than and equal to 6 months	3
More than 6 months- Less than and equal to 1 year	11
More than 1 year- Less than and equal to 2 year	8
More than 2 year - Less than and equal to 3 year	11
More than 3 year - Less than and equal to 4 year	12
More than 4 year	4

No Answer

2
---

Q25. Before you join this company, have you worked for another company?

1. Female 

38
----

2. Male 

11
----

Q26. If yes, why did you leave from those factories? Select the most suitable reason.

- 1. Problem with supervisor 

6
---
- 2. Inadequate salary 

15
----
- 3. Monotony of work 

5
---
- 4. Other reason (s) 

6
---

Not Applicable 

11
----

 No Answer 

6
---

Q27. What is your sex? PLEASE TICK.

1. Female 

47
----

2. Male 

2
---

Q28. What is your age? PLEASE TICK.

Less 15	-	41-45	3
16-20	-	46-50	1
21-25	12	51-55	-
26-30	18	56-60	-
31-35	8	61-65	1
36-40	5	66 and above	-

No Answer

1
---

Q29. Please select if you have any of these educational qualification. PLEASE TICK.

Less than G.C.E. O/L	17	Following a Degree	1
Followed G.C.E. O/L	16	Degree Completed	-
Followed G.C.E. A/L	2	More than First Degree	-
Passed G.C.E. A/L	4	Other: NVQ -2	

No Answer

7
---

Q30. Please write down here your average monthly salary.

Average salary 15302.04

Standard Deviation (2027.77)

### Appendix 3

# Questionnaire Survey on Teamwork

August 2017

I am Manjula Wanninayaka and a student at Kansai University of Japan. I am examining teamwork practices in your work place. Since, I expect your kindly participation to this study by answering the following questions.

- ◆ Please complete all the questions.
  
- ◆ There is no any known risk for responding. In order to ensure that all information will remain confidential, please do not include your name.
  
- ◆ If you want any additional information please contact me at the number listed below.

Thank you for taking the time to assist me in my educational endeavour.

Graduate School of Sociology  
Kansai University  
Japan

*Address in Sri Lanka:*

Tel: 070\*\*\*\*\*

What is your team Name or Number?

(Optional) .....

**There are various statements about your work and team. PLEASE SELECT the suitable one which reflects your feelings.**

Q1. The people in my production line or unit work as a team.

- 1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.
- 4. Agree.                                      5. Strongly agree.

Q2. I am a member of this work team.

- 1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.
- 4. Agree.                                      5. Strongly agree.

Q3. I am satisfied with my present colleagues.

- 1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.
- 4. Agree.                                      5. Strongly agree.

Q4. I pleased with the way my colleagues and I work together.

- 1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.
- 4. Agree.                                      5. Strongly agree.

Q5. I am very satisfied with working in this team.

- 1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.
- 4. Agree.                                      5. Strongly agree.

Q6. I am satisfied with the friendliness of my team members.

- 1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.
- 4. Agree.                                      5. Strongly agree.

Q7. I can perform more than one task in the team.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q8. Team members of my team know each other's job.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q9. I carry out the same task over and over again.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q10. Team members are given specific training to improve their machine maintenance skills.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q11. I can cover absentee work in my team.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q12. I want to learn as many jobs as possible.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q13. When I get a new skill organization pay for it.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q14. I develop my skills mainly by using on the job training facilities.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q15. During my work period, I develop my skills mainly by using training centre or line which is in the factory.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q16. I know what our team's final goal is.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q17. In my team, we are jointly responsible for workplace results.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q18. In my team, we have a clear goal to be achieved as a team

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q19. I have to obtain information and advice from my colleagues to complete my work.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q20. I have to depend on my colleagues for the start of my work.

- |                       |                    |                                |
|-----------------------|--------------------|--------------------------------|
| 1. Strongly disagree. | 2. Disagree.       | 3. Neither Agree Nor Disagree. |
| 4. Agree.             | 5. Strongly agree. |                                |

Q21. In order to complete their work, my colleagues have to obtain information and advice from me.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
 4. Agree.                                      5. Strongly agree.

Q22. I need to collaborate with my colleagues to perform my job well.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
 4. Agree.                                      5. Strongly agree.

Q23. Team members frequently have to coordinate their effort with each other.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
 4. Agree.                                      5. Strongly agree.

Q24. We cannot complete target unless everyone contributes.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
 4. Agree.                                      5. Strongly agree.

Q25. Who should be made decisions in following situation? PLEASE TICK.

	1	2	3	4	5
Decide by Tasks	Decide by the Managem ent	Decide by the Management discussing with us	Decide by our team discussing with the Management	Decide by our team	Do not know who makes the decisions
Our own working pace					
Starting time of a piece of work					

Finishing time of a piece of work					
The methods to use in carrying out our works					
Transfer of members within the workplace					
Quality control relating task					

Q26. If I got into difficult at work, my section members help me.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.    5. Strongly agree.

Q27. I help my work mates when they have work problems on the line.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.    5. Strongly agree.

Q28. If any problem occurred on my work, it is resolved in discussing with my colleagues.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.    5. Strongly agree.

Q29. In the day of, when I finish my daily work, I may help someone who is not finished.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.                                      5. Strongly agree.

Q30. Members of my team share information with other team members about our work.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.                                      5. Strongly agree.

Q31. I want to be like my supervisor.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.                                      5. Strongly agree.

Q32. I always expect the supervisor's support.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.                                      5. Strongly agree.

Q33. I satisfy with my supervisor's way of supervision.

1. Strongly disagree.                      2. Disagree.                      3. Neither Agree Nor Disagree.  
4. Agree.                                      5. Strongly agree.

**Please check whether all questions were answered or not.**

**Please let me know about yourself**

Q34. How long have you been working for this company? Please write down.

Year..... Months.....

Q35. Before you join this company, have you worked for another company?

1. Yes                           2. No

Q36. If yes, why did you leave from those factories? Select the most suitable reason.

- 1. Problem with supervisor
- 2. Inadequate salary
- 3. Monotony of work
- 4. Unbearable work load
- 5. Other reason (s)

Q37. What is your sex? PLEASE TICK.

- 1. Female
- 2. Male

Q38. What is your age? PLEASE TICK.

Less than 16		41-45	
16-20		46-50	
21-25		51-55	
26-30		56-60	
31-35		61-65	
36-40		66 and above	

Q39. Please select your last educational qualification. PLEASE TICK.

Less than G.C.E. O/L		Following a Degree	
Followed G.C.E. O/L		Degree Completed	
Followed G.C.E. A/L		More than First Degree	
Passed G.C.E. A/L		Other: Please write in	

Q40. Marriage status

- 1. Unmarried
- 2. Married

Q41. Please write down here your average monthly salary

.....

**Thank you very much for completing this questionnaire.**

**The Questionnaire in Sinhala Language**

**කණ්ඩායම් ක්‍රියාකාරීත්වයන් (ටීම් වර්ක්) පිළිබඳ ප්‍රශ්නාවලිය  
2017**

ජපානයේ කන්සයි විශ්වවිද්‍යාලයේ ඉගෙනුම ලබන මහජන වන්නිතායක වන මා විසින් ඔබ ආයතනයේ කණ්ඩායම් ක්‍රියාකාරීත්වයන් ( ටීම් වර්ක්) පිළිබඳව අධ්‍යයනයක් කිරීමට බලාපොරොත්තු වෙමි. එබැවින් පහත ප්‍රශ්නාවලියෙහි අඩංගු ප්‍රශ්න සඳහා පිළිතුරු ලබා දෙනමෙන් කාරුණිකව ඉල්ලා සිටිමි.

- ◆ කරුණාකර සියලුම ප්‍රශ්න සඳහා පිළිතුරු ලබා දෙන්න.
- ◆ මෙම අධ්‍යයනය පිළිබඳව තවදුරටත් විස්තර අවශ්‍ය වන්නේ නම් පහත දුරකථන අංකයට අමතන්න.
- ◆ ඔබ ලබා දෙන පිළිතුරුවල රහස්‍යභාවය සම්පූර්ණයෙන්ම ආරක්ෂා කිරීම සඳහා ඔබගේ නම මෙහි සඳහන් කිරීමෙන් වළකින්න.

මාගේ අධ්‍යාපන කටයුතු සාර්ථක කරගැනීම සඳහා ඔබ ලබාදෙන සහයෝගය ඉතා අගය කොට සලකමි.

පශ්චාත් උපාධි ආයතනය  
සමාජ විද්‍යා අධ්‍යයන අංශය  
කන්සයි විශ්වවිද්‍යාලය  
ජපානය

ශ්‍රී ලංකාව තුළ ලිපිනය  
Tel:070-\*\*\*\*\*



Q7.මට කණ්ඩායම තුළ වැඩ කාර්යයන් එකකට වඩා සිදු කිරීමේ හැකියාව ඇත.

- 1.කොහෙත්ම එකඟ නොවේ.
- 2. එකඟ නොවේ.
- 3.කිව නොහැක.
- 4. එකඟ වේ.
- 5.සම්පූර්ණයෙන්ම එකඟ වේ.

Q8.මම කණ්ඩායමේ සාමාජික සාමාජිකාවන්ගේ වැඩ කාර්යයන්ද නොඳින අවබෝධ කරගෙන සිටිමි.

- 1.කොහෙත්ම එකඟ නොවේ.
- 2. එකඟ නොවේ.
- 3.කිව නොහැක.
- 4. එකඟ වේ.
- 5.සම්පූර්ණයෙන්ම එකඟ වේ.

Q9.දිනපතාම මම විසින් කරනු ලබන්නේ එකම කාර්යයකි.

- 1.කොහෙත්ම එකඟ නොවේ.
- 2. එකඟ නොවේ.
- 3.කිව නොහැක.
- 4. එකඟ වේ.
- 5.සම්පූර්ණයෙන්ම එකඟ වේ.

Q10. අප ආයතනය විසින් යන්ත්‍ර සහ උපකරණ හඬත්තුව පිළිබඳව ප්‍රමාණවත් පුහුණුවක් ලබා දෙයි.

- 1.කොහෙත්ම එකඟ නොවේ.
- 2. එකඟ නොවේ.
- 3.කිව නොහැක.
- 4. එකඟ වේ.
- 5.සම්පූර්ණයෙන්ම එකඟ වේ.

Q11.මට අප කණ්ඩායමේ සාමාජිකයෙක් වැඩට නොපැමිණිවිට ඔහුගේ වැඩ කොටසද ආවරණය කල හැක.

- 1.කොහෙත්ම එකඟ නොවේ.
- 2. එකඟ නොවේ.
- 3.කිව නොහැක.
- 4. එකඟ වේ.
- 5.සම්පූර්ණයෙන්ම එකඟ වේ.

Q12.මම එක වැඩක් පමණක් නොව ලයින් එකේ සැම වැඩකොටසක්ම ඉගෙනගැනීමට උත්සහ දරමි.

- 1.කොහෙත්ම එකඟ නොවේ.
- 2. එකඟ නොවේ.
- 3.කිව නොහැක.
- 4. එකඟ වේ.
- 5.සම්පූර්ණයෙන්ම එකඟ වේ.



Q19.මට මාගේ කාර්යය සම්පූර්ණ කිරීමට කණ්ඩායමේ සාමාජික සාමාජිකාවන්ගේ තොරතුරු සහ උපදෙස් ලබා ගැනීමට සිදු වේ.

- 1.කොහෙත්ම එකඟ නොවේ.
- 2. එකඟ නොවේ.
- 3.කිව නොහැක.
- 4. එකඟ වේ.
- 5.සම්පූර්ණයෙන්ම එකඟ වේ.

Q20.මගේ වැඩ කාර්යය ආරම්භ කිරීම වෙනත් අයකුගේ කාර්යය සම්පූර්ණ කිරීම මත රඳා පැවතේ.

- 1.කොහෙත්ම එකඟ නොවේ.
- 2. එකඟ නොවේ.
- 3.කිව නොහැක.
- 4. එකඟ වේ.
- 5.සම්පූර්ණයෙන්ම එකඟ වේ.

Q21.කණ්ඩායමේ සාමාජික සාමාජිකාවන්ට ඔවුන්ගේ කාර්යයන් සම්පූර්ණ කිරීමට මගෙන් තොරතුරු සහ උපදෙස් ලබා ගැනීමට සිදුවේ.

- 1.කොහෙත්ම එකඟ නොවේ.
- 2. එකඟ නොවේ.
- 3.කිව නොහැක.
- 4. එකඟ වේ.
- 5.සම්පූර්ණයෙන්ම එකඟ වේ.

Q22.කණ්ඩායම තුළ වැඩ කාර්යයන් සිදුකිරීමේදී අන් සාමාජිකයින් සමඟ සහසම්බන්ධයෙන් කටයුතු කිරීමට සිදු වේ.

- 1.කොහෙත්ම එකඟ නොවේ.
- 2. එකඟ නොවේ.
- 3.කිව නොහැක.
- 4. එකඟ වේ.
- 5.සම්පූර්ණයෙන්ම එකඟ වේ.

Q23.කණ්ඩායම තුළ වැඩ කාර්යයන් සිදුකිරීමේදී අන් සාමාජිකයින් සමඟ සහසම්බන්ධීකරණයෙන් කටයුතු කිරීමට සිදු වේ.

- 1.කොහෙත්ම එකඟ නොවේ.
- 2. එකඟ නොවේ.
- 3.කිව නොහැක.
- 4. එකඟ වේ.
- 5.සම්පූර්ණයෙන්ම එකඟ වේ.

Q24.මාගේ කණ්ඩායමේ අරමුණ ලබා කරගැනීමට කණ්ඩායමේ සියලුම සාමාජික සාමාජිකාවන්ගේ සහයෝගය අවශ්‍ය වේ.

- 1.කොහෙත්ම එකඟ නොවේ.
- 2. එකඟ නොවේ.
- 3.කිව නොහැක.
- 4. එකඟ වේ.
- 5.සම්පූර්ණයෙන්ම එකඟ වේ.

Q25. පහත සඳහන් කාර්යයන් වලදී තීරණ ගනු ලබන්නේ කවුරුන් විසින්ද? අදාළ කොටුව තුළ හරි ලකුණ (✓) යොදන්න.

	1	2	3	4	5
කවුරුන් විසින්ද කාර්යයන්	සුපරිසෘක (සුපවයිසර්) අතූළ කළමනාකාරි ත්වය විසින් තීරණ ය කරයි.	අප සමඟ සාකච්ඡා කර සුපරිසෘක (සුපවයිසර්) අතූළ කළමනාකාරි ත්වය විසින් තීරණ ය කරයි.	කළමනාකාරි ත්වය සමඟ සාකච්ඡා කර අප කණ්ඩායම විසින් තීරණ කරයි.	අප කණ්ඩායම විසින් තීර ණ කරයි.	තීරණය කරනු ලබන් න් කවුරුන් විසින්ද නොදනිමි.
අපගේ වැඩ කාර්යයන් කරන වේගය ජිලිබඳව					
අපගේ වැඩ කාර්යයන් ආරම්භ කරන වේලාව ජිලිබඳව					
අපගේ වැඩ කාර්යයන් අවසාන කරන ක්‍රමයක් ජිලිබඳව					
අපගේ වැඩ කාර්යයන් කරන ක්‍රමයක් ජිලිබඳව.					
සේවකයින් කණ්ඩායම් තුළ වෙනත් කාර්යයන් සඳහා මාරුවීම්					
තත්ත්ව පාලන					





Q38.ඔබ අයත් වන වයස් කාණ්ඩය කුමක්ද? අදාළ කොටුව තුළ හරි ලකුණ ( ✓ ) යොදන්න.

අවු : 16ට අඩු		41 - 45	
16 - 20		46 - 50	
21 - 25		51 - 55	
26 - 30		56 - 60	
31 - 35		61 - 65	
36 - 40		66 ට වැඩි	

Q39.ඔබගේ අවසාන අධ්‍යාපන මට්ටම කුමක්ද? අදාළ කොටුව තුළ හරි ලකුණ ( ✓ ) යොදන්න.

සාමාන්‍ය පෙළ හදාරා නැත		උපාධියක් හදාරමින් සිටිමි	
සාමාන්‍ය පෙළ හදාරා ඇත		උපාධියක් හදාරා ඇත	
උසස් පෙළ හදාරා නැත		පශ්චාත් උපාධියක් හදාරා ඇත	
උසස් පෙළ සමත්		වෙනත් අධ්‍යාපන සුදුසුකම්	

Q40.විවාහක/අවිවාහක තත්වය

1.අවිවාහකය

2.විවාහකය

Q41.ඔබගේ සාමාන්‍ය මාසික වැටුප කොපමණද?.....

සියලුම ප්‍රශ්න සඳහා ජිලිතූරු සැපවූයේද යන්න කරුණාකර නැවත වරක් පරීක්ෂා කරන්න.

ඔබ දැක්වූ සහයෝගයට ස්තූතියි

**Results of the Main Survey (Team Characteristics)**

**Mean Values (Standard Deviations)**

Q. No.	Questions Items	All N=839	Porcelain Sector		Garments Sector				TF Sec.
			A N=150	B N=178	C N=148	D N=57	E N=94	F N=95	G N=117
			<b>Multi-skills</b>						
7	I can perform more than one task in the team.	4.1 (.83)	3.97 (.82)	4.12 (.79)	4.02 (.86)	4.10 (.69)	4.03 (.95)	4.17 (.88)	4.22 (.73)
8	Team members of my team know each other's job.	4.11 (.70)	4.06 (.80)	4.08 (.64)	4.01 (.74)	4.07 (.74)	4.22 (.62)	4.21 (.77)	4.20 (.59)
11	I can cover absentee work in my team.	3.64 (1.1)	3.78 (1.0)	3.54 (1.1)	3.75 (1.0)	4.00 (.87)	3.96 (.87)	3.86 (1.0)	2.85 (1.1)
<b>Common goal</b>									
16	I know what our team's final goal is.	4.02 (.81)	4.08 (.75)	3.78 (.82)	4.10 (.83)	4.00 (.70)	4.19 (.82)	4.28 (.72)	3.87 (.83)
17	In my team, we are jointly responsible for workplace results.	3.92 (.93)	3.99 (.79)	3.69 (.94)	4.08 (.78)	4.05 (.81)	3.94 (1.1)	4.14 (1.0)	3.70 (1.0)
18	In my team, we have a clear goal to be achieved as a team.	4.34 (.66)	4.44 (.61)	4.05 (.71)	4.44 (.64)	4.48 (.54)	4.44 (.67)	4.52 (.56)	4.25 (.69)
<b>Task interdependence</b>									

19	I have to obtain information and advice from my colleagues to complete my work.	4.15 (.81)	4.16 (.85)	4.15 (.69)	4.16 (.96)	4.17 (.73)	4.05 (.75)	4.07 (.96)	3.99 (.71)
20	I have to depend on my colleagues for the start of my work.	3.63 (1.1)	3.64 (1.0)	3.65 (1.1)	3.67 (1.1)	3.54 (1.1)	3.70 (1.1)	3.55 (1.2)	3.62 (1.1)
21	In order to complete their work, my colleagues have to obtain information and advice from me.	3.53 (.92)	3.42 (.92)	3.70 (.81)	3.30 (1.0)	3.75 (.82)	3.41 (.95)	3.46 (1.0)	3.76 (.76)
22	I need to collaborate with my colleagues to perform my job well.	3.70 (1.1)	3.75 (1.0)	3.62 (1.1)	3.69 (1.1)	3.67 (1.0)	3.72 (1.1)	3.66 (1.1)	3.81 (1.0)
23	Team members frequently have to coordinate their effort with each other.	4.40 (.63)	4.5 (.56)	4.09 (.52)	4.53 (.53)	4.46 (.66)	4.39 (.71)	4.35 (.78)	4.40 (.64)
24	We cannot complete target unless everyone	4.59 (.55)	4.66 (.47)	3.87 (.83)	4.70 (.46)	4.00 (.53)	4.62 (.62)	4.15 (.71)	4.58 (.56)

	contributes.								
<b>Team Autonomy</b>									
25	Our own working pace	1.74 (1.0)	2.01 (1.2)	1.79 (1.1)	1.66 (.98)	1.75 (1.0)	1.58 (1.0)	1.64 (1.1)	2.92 (1.6)
	Starting time of a piece of work	1.45 (.81)	1.44 (.84)	1.61 (.98)	1.62 (1.0)	1.50 (.95)	1.64 (1.1)	1.76 (1.3)	1.75 (1.4)
	Finishing time of a piece of work	1.53 (.86)	1.60 (.91)	1.49 (.85)	1.67 (1.1)	1.42 (.66)	1.82 (1.2)	1.75 (1.2)	2.08 (1.6)
	The methods to use in carrying out our works	1.78 (1.0)	1.93 (1.1)	1.76 (1.0)	1.65 (.99)	1.63 (.91)	1.90 (1.2)	1.95 (1.1)	2.43 (1.5)
	Transfer of member to different work task in your team	1.56 (.85)	1.55 (.91)	1.53 (.93)	1.57 (.84)	1.46 (.71)	1.54 (.93)	1.79 (.95)	2.04 (1.4)
	Quality control related tasks	1.54 (.85)	1.63 (.96)	1.97 (1.3)	1.92 (1.4)	1.44 (.86)	2.03 (1.4)	2.10 (1.6)	2.29 (1.65)
<b>Mutual Support</b>									
26	If I got into difficult at work, my section members help me.	4.07 (.82)	3.84 (.96)	3.87 (.95)	4.22 (.80)	4.12 (.85)	4.12 (.74)	4.20 (.74)	4.28 (.63)
27	I help my work mates when they have work problems on the line.	4.34 (.56)	4.30 (.59)	4.32 (.55)	4.43 (.59)	4.30 (.50)	4.23 (.64)	4.38 (.49)	4.29 (.54)
28	If any problem	4.25	4.18	4.19	4.32	4.33	4.12	4.22	4.26

	occurred on my work, it is resolved in discussing with my colleagues.	(.64)	(.57)	(.60)	(.68)	(.58)	(.71)	(.66)	(.65)
29	In the day of, when I finish my daily work, I help someone who is not finished.	4.10 (.74)	3.96 (.72)	4.34 (.60)	4.22 (.69)	4.14 (.62)	4.07 (.73)	4.28 (.75)	4.09 (.75)
30	Members of my team share information with other team members about our work.	4.12 (.60)	3.97 (.74)	4.23 (.60)	4.21 (.63)	4.63 (.59)	4.04 (.63)	4.74 (.44)	4.08 (.59)

**Note:** TF sector-Transformer manufacturing

**Results of the Main Survey (Other Questions)**

**Mean Values (Standard Deviation)**

Q. No.	Questions Items	All N=839	Porcelain Sector		Garments Sector				TF Sec.
			A	B	C	D	E	F	G
			N=150	N=178	N=148	N=57	N=94	N=95	N=117
1	The people in my production line or unit work as a team.	3.85 (.96)	3.64 (.94)	3.7 (.99)	4.12 (.85)	4.18 (.55)	4.04 (.84)	4.11 (.87)	3.46 (1.1)
2	I am a member of this work team.	4.31 (.69)	4.12 (.72)	4.19 (.75)	4.47 (.65)	4.41 (.69)	4.54 (.60)	4.47 (.58)	4.20 (.65)
3	I am satisfied with my present colleagues.	3.73 (.90)	3.58 (.90)	3.68 (.86)	3.92 (.86)	3.98 (.76)	3.85 (.91)	3.93 (.95)	3.40 (.91)
4	I pleased with the way my colleagues and I work together.	3.66 (.92)	3.5 (.94)	3.63 (.96)	3.91 (.81)	4.00 (.70)	3.59 (.89)	3.84 (.84)	3.37 (.96)
5	I am very satisfied with working in this team.	3.85 (.82)	3.81 (.80)	3.93 (.79)	4.38 (.79)	4.16 (.69)	4.25 (.69)	4.12 (.89)	3.90 (.84)
6	I am satisfied with the friendliness of my team members.	3.79 (.88)	3.65 (.89)	3.70 (.85)	4.02 (.87)	4.00 (.71)	3.90 (.86)	4.01 (.75)	3.47 (.93)

9	I carry out the same task over and over again.	2.56 (1.2)	2.66 (1.1)	2.75 (1.2)	2.74 (1.1)	2.38 (1.2)	2.85 (1.2)	2.59 (1.2)	1.74 (.88)
10	Team members are given specific training to improve their machine maintenance skills.	3.67 (1.1)	3.85 (1.1)	3.37 (1.1)	3.74 (1.1)	3.94 (.95)	3.68 (1.0)	4.01 (.91)	3.38 (1.1)
12	I want to learn as many jobs as possible.	4.26 (.76)	3.64 (.94)	4.36 (.64)	4.39 (.68)	4.24 (.61)	4.40 (.57)	4.44 (.63)	4.50 (.61)
13	When I get a new skill organization pay for it.	3.03 (1.3)	4.12 (.72)	1.94 (1.1)	3.39 (1.1)	3.33 (1.1)	3.50 (1.2)	2.93 (1.1)	2.42 (1.2)
14	I develop my skills mainly by using on the job training facilities.	3.73 (.93)	3.58 (.90)	3.6 (1.0)	3.84 (.93)	3.74 (.81)	3.76 (.91)	3.80 (.92)	3.93 (.82)
15	During my work period, I develop my skills mainly by using training centre or line which is in the factory.	3.25 (1.1)	3.5 (.94)	3.07 (1.2)	3.23 (1.1)	3.49 (1.0)	3.18 (1.1)	3.15 (1.2)	3.26 (1.1)

31	I want to be like my supervisor.	4.03 (.93)	3.98 (.90)	4.21 (.60)	3.89 (1.1)	3.63 (1.1)	4.44 (.60)	3.41 (1.2)	4.38 (.55)
32	I always expect the supervisor's support.	3.55 (1.1)	3.15 (1.2)	3.45 (1.1)	3.96 (1.0)	3.78 (.92)	3.97 (1.0)	3.26 (1.1)	3.55 (1.1)
33	I satisfy with my supervisor's way of supervision.	3.57 (1.0)	3.28 (1.0)	2.96 (1.1)	4.04 (.97)	4.28 (.62)	3.99 (.93)	3.78 (1.0)	3.39 (.96)

### Results of Q.35 and Q.36

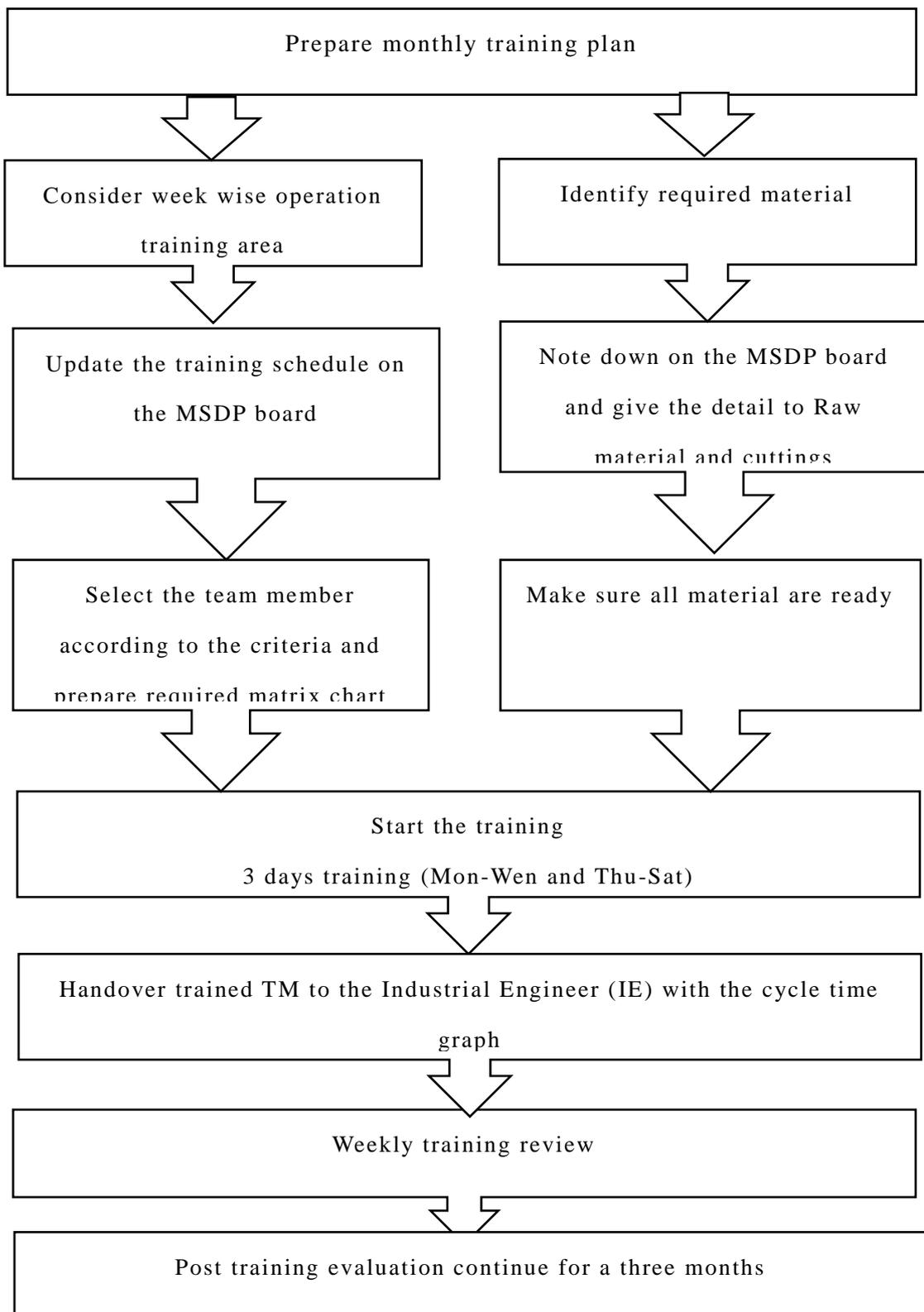
#### (Frequency Table)

35	Before you join this company, have you worked for another company?								
	Yes	381	50	26	105	23	78	50	49
	No	443	94	149	43	32	15	45	65
	No Answer	15	6	3	0	2	1	0	3
36	If yes, why did you leave from those factories? Select the most suitable reason.								
	Problem with supervisor	54	6	1	22	5	11	4	5

Inadequate salary	168	29	10	47	9	28	22	23
Monotony of work	21	3	3	10	0	2	1	2
Unbearable work load	34	6	4	7	1	5	6	5
Other reason(s)	82	4	4	12	5	30	16	11
No Answer	22	2	4	7	3	2	1	3
Not Applicable	443	94	149	43	32	15	45	65

## Appendix 4

### Multi-skill Development Programme (MSDP)



Source: Company's Record

Appendix 5

Incentives payments on target achievements

Style	SMV	OutPut	Pre Shipment Fail	Production Hours	Break Even	Kiko Off Efficency
Date : 01.08.2014	To : 25.08.2014				Plant : 5600	
Work Center: 23C						
FSVG11026375 DARK AND STORMY 2J26						
70151435 6.65	885	0	98.08	66.35	70	
FSVG11042321 Black Pearl 95B7						
70153343 6.65	195	0	21.62	14.62	70	

EPF #	Name	Shift	In Time	Out Time	Availiable	Incentive Earning	Bonus Amount	Cummulate Earnings
00003365	G L C N. Lankathilak	2	06:00:00	13:55:00	7.20	110.51	175.00	2,961.22
00004272	H A N.Hettiarachchi	2	06:00:00	13:55:00	7.20	110.51	175.00	2,961.22
00004452	S M P D.SERASINHA	2	08:00:00	13:55:00	5.40	85.39	136.78	2,122.85
00004529	R M A P.Rajakaruna	2	06:00:00	13:55:00	7.20	110.51	175.00	2,961.22
00006691	R.Udayaseeli	2	06:00:00	13:55:00	7.20	110.51	175.00	2,961.22
00006765	B M S.Nuwanthi	2	06:00:00	13:55:00	7.20	110.51	175.00	1,842.63
00007090	R. G.Dinushi	2	06:00:00	13:55:00	7.20	110.51	175.00	2,961.22
00008260	Y. A.Nilmmini	2	06:00:00	13:55:00	7.20	110.51	175.00	2,961.22
00008971	Nirosha	2	06:00:00	13:55:00	7.20	110.51	175.00	2,961.22
00009085	R.M.Shashikala	2	06:00:00	13:55:00	7.20	110.51	175.00	2,961.22
00009693	S.P.D.THILINI AFSARA	2	06:00:00	13:55:00	7.20	110.51	175.00	2,926.53
00009809	G.G.S.Lakmali	2	06:00:00	13:55:00	7.20	110.51	175.00	2,961.22
00009847	W.DISANAYAKA	2	06:00:00	13:55:00	7.20	110.51	175.00	2,961.22
00010239	J.P.D.JAYALATH	2	06:00:00	13:55:00	7.20	110.51	175.00	2,961.22
00010573	ANOMA SIRIWARDANA	2	06:00:00	13:55:00	7.20	110.51	175.00	2,961.22
00010721	.IRANKA	2	06:00:00	13:55:00	7.20	110.51	175.00	2,234.19
<b>Total</b>					<b>115.40</b>	<b>1,743.04</b>	<b>2,761.78</b>	<b>44,660.84</b>
Line Efficiency :			103.49 %					
Total No. of Employees :	16							
26.08.2014 11:22:40								

Style	SMV	OutPut	Pre Shipment Fail	Production Hours	Break Even	Kiko Off Efficency
Date : 01.09.2014	To : 11.09.2014				Plant : 5600	
Work Center: 23C						
FSVG 11042321 Winterberry 31P4						
70155828 6.65	148	0	16.40	11.32	70	
FSVG 11042321 WICKD ROSE OUNC						
70155830 6.65	978	0	108.40	74.78	70	

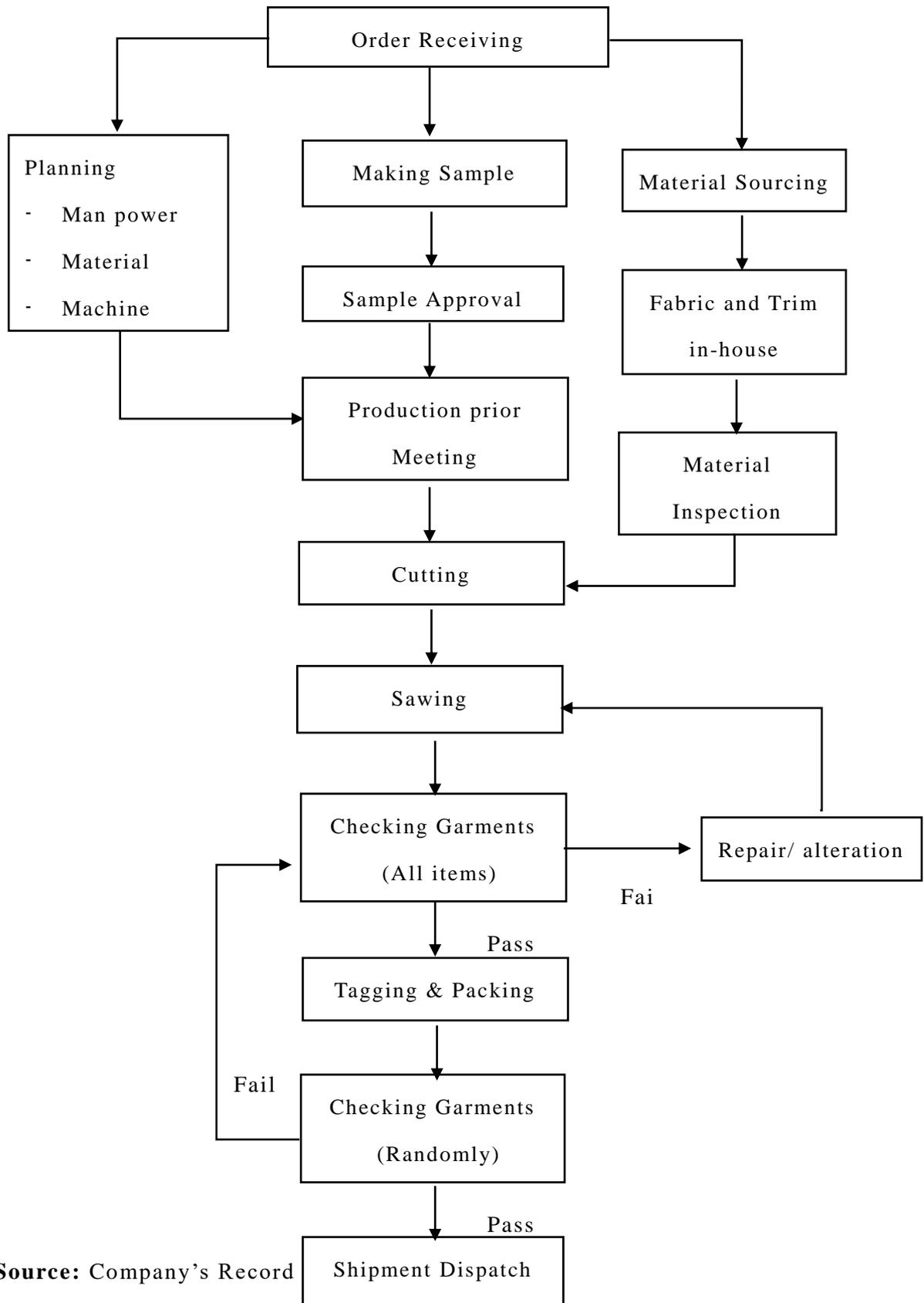
  

EPF #	Name	Shift	In Time	Out Time	Availiable	Incentive Earning	Bonus Amount	Cummulate Earnings
00003365	G L C N. Lankathilak	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
00004272	H A N.Hettiarachchi	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
00004452	S M P D.SERASINHA	2	08:00:00	13:55:00	5.40	80.23	136.78	1,474.28
00004529	R M A P.Rajakaruna	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
00006691	R.Udayaseeli	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
00007090	R. G.Dinushi	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
00007203	A. M. D.Lasantha	2	06:00:00	13:55:00	7.20	103.83	175.00	1,822.91
00008260	Y. A.Nilmmini	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
00008971	Nirosha	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
00009085	R.M.Shashikala	2	06:00:00	13:55:00	7.20	103.83	175.00	1,618.41
00009134	W. P.Savva	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
00009693	S.P.D.THILINI AFSARA	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
00009809	G.G.S.Lakmali	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
00009847	W.DISANAYAKA	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
00010239	J.P.D.JAYALATH	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
00010573	ANOMA SIRIWARDANA	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
00010721	.IRANKA	2	06:00:00	13:55:00	7.20	103.83	175.00	1,905.24
<b>Total</b>					<b>123.00</b>	<b>1,741.51</b>	<b>2,936.78</b>	<b>31,588.96</b>
Line Efficiency :			101.46 %					
Total No. of Employees :	17							
12.09.2014 11:11:19								

Source: Company's Record

**Appendix 6**

**Production Process of Garments Manufacturing**



Source: Company's Record



Appendix 8

Hourly Production Sheet (Factory A)

DIVISION		HOURLY PRODUCTION SHEET										INDUSTRIAL ENGINEERING				
DATE	SUPERVISOR'S NAME	LINE NO	DESCRIPTION	PLAN EFF.	PLAN TGT/Hr	SHIFT										
01/08	Mr. Asanka	23-C	11026375		150	B										
GMT SMV	6.65	NO OF OPERATORS	16	100% TGT	144	PRE.DAY EFF.	TO DAY OUT									
E.P.F	NAME	OPERATION	SMV	TGT	POT	1	2	3	4	5	6	7	8	9	10	TTL
	Nisoneela	lacecut (leg)			200	200	50	160	170	180	170	150				
		(Waist)			200	200	80	180	170	180	170	150				
	Dineshi	} Waist				65	30	80	75	75	75	55				
	Anusha					60	40	65	70	80	75	45				
	Total					135	70	130	140	155	150	120				
	Nirasha	B/F rise				120	75	130	150	160	150	120				
	Tilini	} Leg				60	30	65	65	60	60	55				
	Lakshmi					45	30	60	40	50	50	45				
	Dilhani					10	10	15	35	40	40	40				
	Total					115	70	140	140	150	150	140				
	Tranka	In seam				110	65	140	140	160	125	130				
	Ghashika	Bar lock				110	65	140	140	160	125	130				
	Anoma	Gusset fact				110	75	140	140	145	140	130				
	Sawmya	Triming				30	45	110	115	120	125	105				
						50	15	15	15							
	Inoka	Lable				130	60	140	135	135	135	130				
		Baw				130	60	140	135	135	135	130				
	Nilmini	Examing				135	60		135	135	135	130				
	Chandrika	Packing				135	60		135	135	135	130				

COMMENTS :

The person who has 3 month work experience is doing leg attachment and her production capacity and speed was far less than other members who are doing same task. Sometimes other 2 members share the newly appointed worker's work load also.

Source: Company's Record

Appendix 9

Daily Attendance Summary (Factory Y)

Attendance Summary - Trendywear- KATUPOTHA  
Attendance Summary - Trendywear- KATUPOTHA

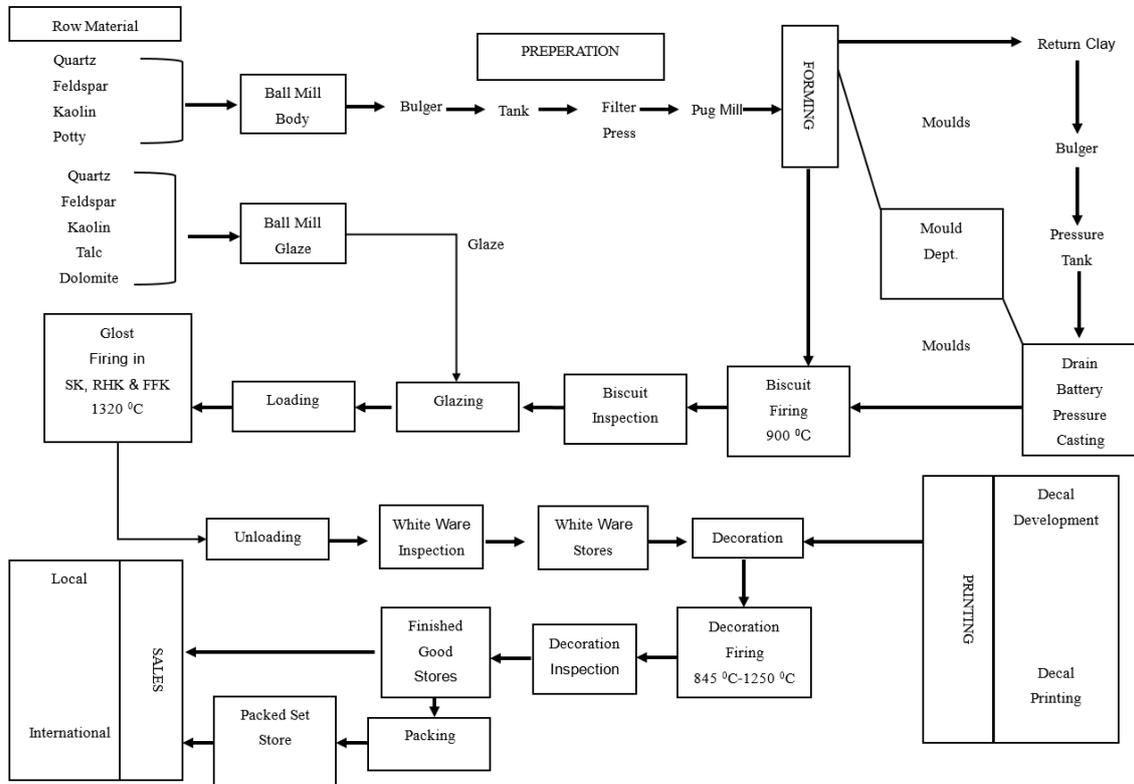
Date: 06-Sep-14 Printed On: 06-Sep-14

BUDGET	PRESENT										ABSENT										LEAVE										ALL				LEFT %
	BGT CARDER	MO	HELPER	SUP & RECORDER	ACT CARDER	DIFFERENCE	TEMPORARY	MO	TMO	HELPER	SUP + RECORDER	PRESENT TOTAL	MO	TMO	HELPER	SUP + LEADER	MO	TMO	HELPER	SUP + RECORDER	ONE DAY ABSENT	ABSENT TOTAL	MALE	FEMALE	PRESENT %	ABSENT %	MO-TMO ABSENT %	LEFT TOTAL	RECRUITMENT						
1ST LINE	53	45	7	2	54	1	40	2	9	1	52	1	0	0	1	1	0	0	0	1	1	2	3	54	3	54	96.30	3.70	2.18	2	3.70				
2ND LINE	53	45	7	2	56	3	40	1	7	1	49	5	0	1	1	0	0	0	0	0	2	7	10	46	87.50	12.50	12.20	0	0.00						
3RD LINE	53	45	7	2	53	0	40	4	4	2	50	2	0	1	0	0	0	0	0	0	0	3	4	50	94.34	5.66	4.55	2	3.77						
4TH LINE	53	45	7	2	52	-1	41	2	5	1	49	1	0	0	1	0	0	0	0	0	1	3	5	49	94.23	5.77	2.33	1	1.92						
5TH LINE	53	45	7	2	53	0	40	6	2	2	50	3	0	0	0	0	0	0	0	0	2	2	5	49	94.34	5.66	6.52	1	1.89						
6TH LINE	53	45	7	2	54	1	39	3	8	2	52	1	0	1	0	0	0	0	0	0	2	2	5	40	96.30	3.70	2.38	0	0.00						
7TH LINE	53	45	7	2	51	-2	40	6	6	1	53	3	0	2	0	0	0	0	0	0	3	5	4	48	91.38	8.62	6.52	1	1.96						
8TH LINE	53	45	7	2	43	-10	27	0	9	1	37	3	0	2	1	0	0	0	0	0	1	6	5	46	86.05	13.95	11.11	0	0.00						
9th LINE	53	45	7	2	48	-5	34	5	4	1	44	3	1	0	0	0	0	0	0	0	2	4	4	45	91.67	8.33	11.11	0	2.08						
10th LINE	53	45	7	2	50	-3	38	1	4	2	44	4	1	0	0	0	0	0	0	0	2	5	5	45	90.00	10.00	11.11	0	0.00						
11th LINE	22	20	0	2	24	2	2	19	0	2	23	1	0	0	0	0	0	0	0	0	2	5	5	45	95.83	4.17	6.62	2	8.33						
TOTAL	605	515	77	22	596	-9	416	52	66	18	552	30	2	8	4	2	0	0	0	0	19	44	45	435	92.62	7.38	6.62	11.00	1.85						
CUTTING	99				71	12	62				62										3	7	9	35	19	87.32	12.68	0	0.00						
PACKING	23				25	2	23				23										1	1	2	10	12	92.00	8.00	0	0.00						
IRONING	37				32	-5	30				30										1	1	2	22	4	93.75	6.25	0	0.00						
QA	75				86	11	82				82										2	2	4	29	43	95.35	4.65	0	0.00						
STORES	14				17	3	15				15										0	0	2	8	3	88.24	11.76	0	0.00						
SAMPLE/TECHNIC	9				14	5	14				14										0	0	0	5	5	100.00	0.00	0	0.00						
MAINT DEPT	13				13	0	12				12										0	1	1	12	0	92.31	7.69	0	0.00						
ADMIN MAIN	10				10	0	9				9										1	0	1	3	7	92.31	7.69	0	0.00						
HR & ACC. DEPT	9				13	4	12				12										1	0	1	7	7	100.00	0.00	0	0.00						
MERC & PL DEPT	5				7	2	7				7										0	0	0	5	0	100.00	0.00	0	0.00						
PRODUCTION STAFF	5				5	0	5				5										0	1	1	25	95.64	4.35	4	17.39							
T/L	15				23	8	22				22										0	1	1	25	95.64	4.35	4	17.39							
POOL	18				13	-5	11				11										1	2	1	6	84.62	15.38	0	0.00							
WORKSTUDY	9				7	-2	5				5										2	7	3	7	71.43	28.57	0	0.00							
INDEPENDENT ALE	0				0	0	0				0										0	1	0	0	0.00	0.00	0	0.00							
TOTAL	301	0	0	0	336	35	0	0	0	0	309	0	0	0	0	0	0	0	0	8	27	147	137	91.96	8.04	10.00	0.00	30.04							
GRAND TOTAL	906				932	26	0	416	52	66	18	861	0	0	0	0	0	0	0	0	71	192	572	94.02	7.62	21.00	0.00	31.89							

Source: Company's Record

## Appendix 10

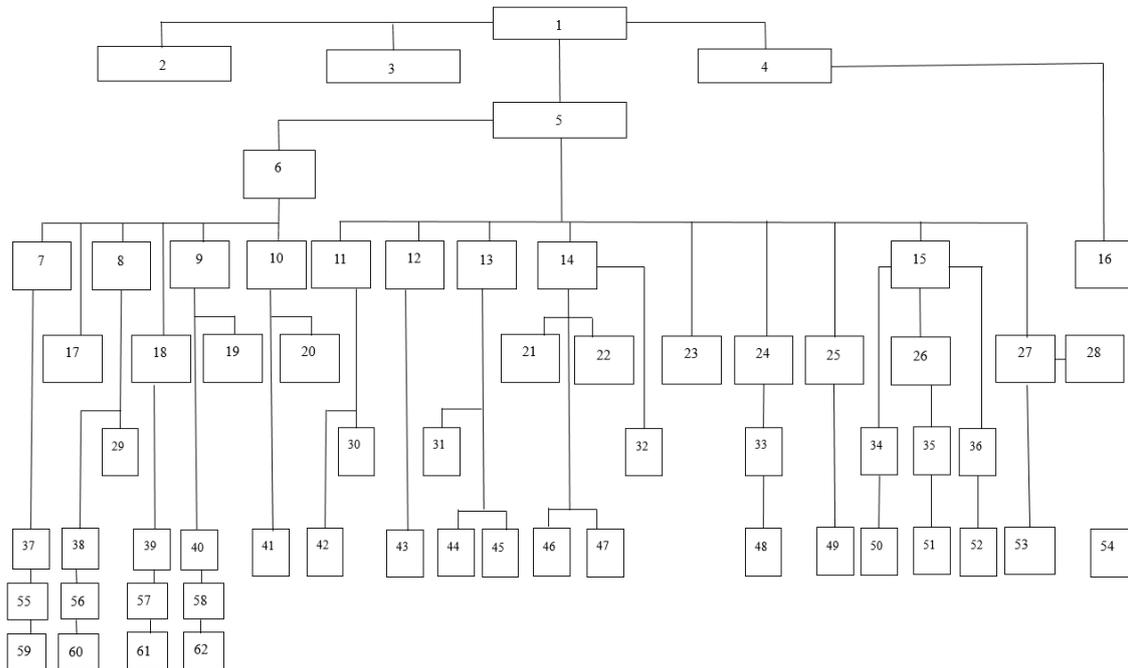
### Production Process of Porcelain Factories (A and B)



Source: Companies' Records

## Appendix 11

### Organizational Structure- Factory A



1. Chairmen and Board of Director
2. Remuneration Committee
3. Management Committee
4. Audit Committee
5. Chief Executive Officer
6. General Manager (Technical)
7. Senior Manager (White ware Firing)
8. Senior Manager (White ware Making)
9. Senior Manager (Decoration Ware)
10. Senior Manager (Planning)
11. Senior Manager (Internal/International Marketing)
12. Senior Manager (Quality Assurance)
13. Senior Manager (Engineering/ Maintenances)
14. Senior Manager (Business development- Domestic)
15. Senior Manager (Management Accountant)
16. Chief Internal Auditor

17. Production Manager (Casting)
18. Production Manager (Printing)
19. Production Manager (Kiln)
20. Production Manager (Planning)
21. Manager (Sales)
22. Showroom Manager
23. Secretary
24. Manager (Supplies and Logistics)
25. Stores Manager
26. Financial Accountant
27. Manager (Human Resources)
28. Manager (Admin)
29. Assistant Manager (Production/Development)
30. Assistant Manager (Internal Marketing)
31. Assistant Manager (Mechanical)
32. Assistant Manager (Sales)
33. Assistant Manager (Supplies and Logistics)
34. Assistant Manager (Information Technology)
35. Assistant Accountant
36. Assistant Cost Accountant
- 37-40. Production Executives
41. Planning Executives
42. International Marketing Executives
43. Quality Control Executives
44. Superintendent Electrical
45. Superintendent Mechanical
46. Executive Sales- Showroom
47. Executive Sales- Dealers
48. Executive – Supplies
49. Store Officer

50. Executive – IT

51&52. Executive – Accounts

53. Executive – HR/Admin

54. Executive – Audit

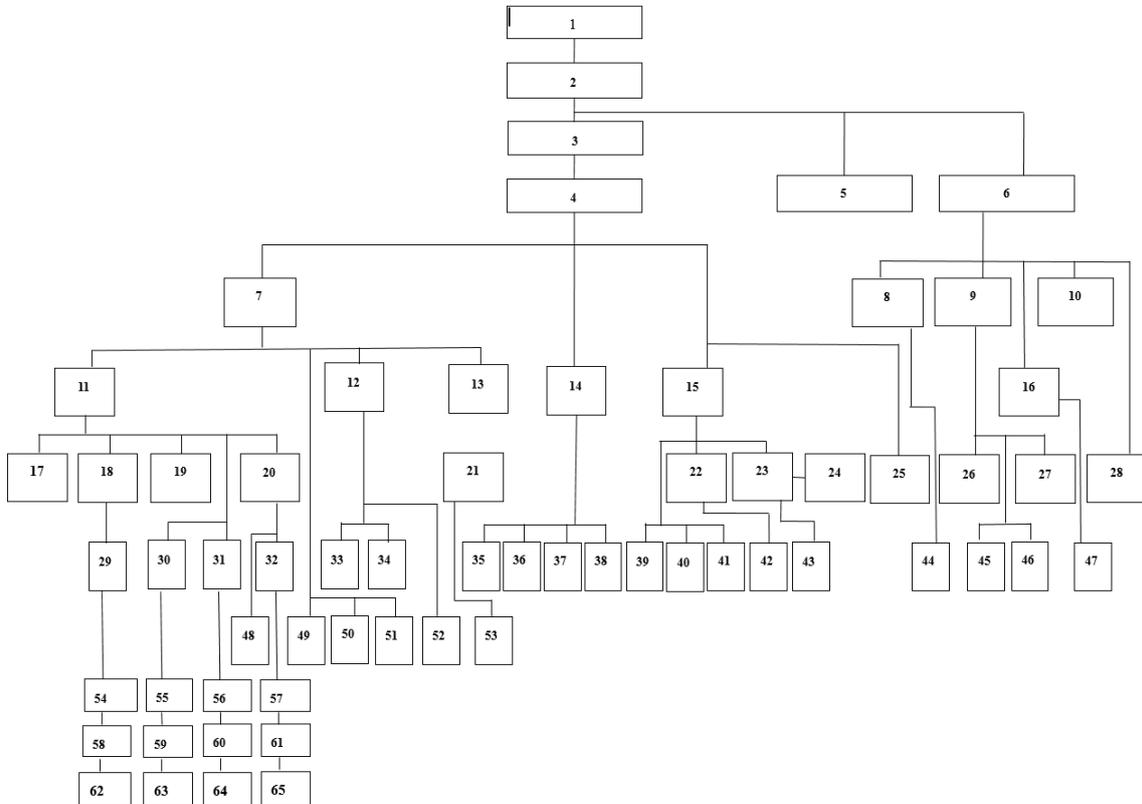
55-68. Supervisors

59-62. Production Workers

**Source:** Company's Record

## Appendix 12

### Organizational Structure- Factory B



1. Chairmen
2. Deputy Chairmen
3. Senior Director
4. Technical Director
5. Director/ Secretary
6. Director/ General Manager
7. Factory Manager
8. Manager (Human Resource Development and Administration)
9. Finance Manager
10. Manager (Compliance)
11. Assistant Production Manager (White Ware)
12. Assistant Production Manager (Decorations)
13. Senior Manager (Production Control)

14. Manager (QA and Production Engineering)
15. Manager (QA and Production Engineering)
16. Chief Marketing Officer
17. Production Manager (Preparation)
18. Production Manager (Forming)
19. Production Manager (Casting and Moulding)
20. Production Manager (White Ware-O/F)
21. Manager (Production Planning and Export Documentations)
22. Factory Engineer (Equipment Management)
23. Manager (New Product Development, Printing, XXX Factory)
24. Production Manager (New Design Development-Packing)
25. Manager (Monozukuri)
26. Accountant
27. Manager (Accounting and Coasting)
28. Manager (Supplies)
29. Manager (Export)
30. Assistant Production Manager (Forming)
31. Assistant Production Manager (white ware R/F)
32. Assistant Production Manager (R/F Glazing)
33. Assistant Production Manager (White ware-O/F)
34. Assistant Manager (New Product Development)
35. Assistant Production Manager (Packing)
36. Assistant Manager (IMS)
37. Assistant Production Manager (Decoration Inspection)
38. Assistant Production Manager (Quality Assurance)
39. Assistant Manager (Quality Assurance)
- 40-41. Production Engineer
42. Assistant Production Engineer
42. Electrical Engineer
43. Assistant Manager (New Product Development-XXX factory)

44. Assistant Manager (Human Resource Development)

45. Assistant Manager (Information Technology)

46. Assistant Manager (Costing)

47. Assistant Manager (Marketing)

48-53. Management Trainee

54-57. Supervisors

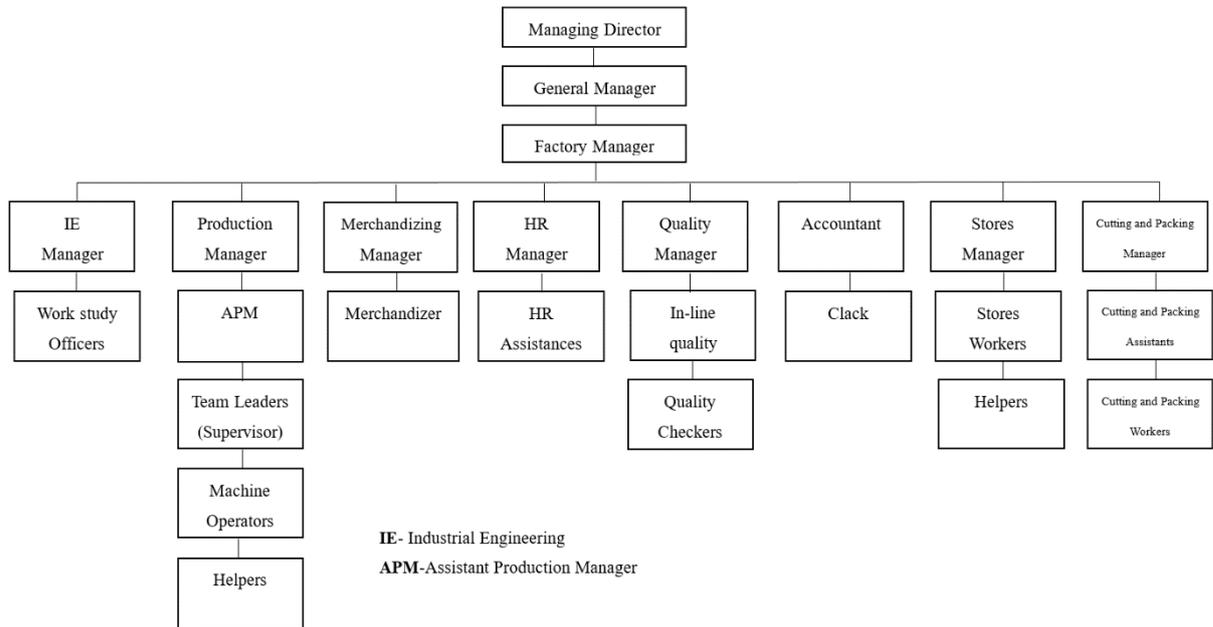
58-61. Junior Supervisors

62-65. Production Workers

**Source:** Company's Record

**Appendix 13**

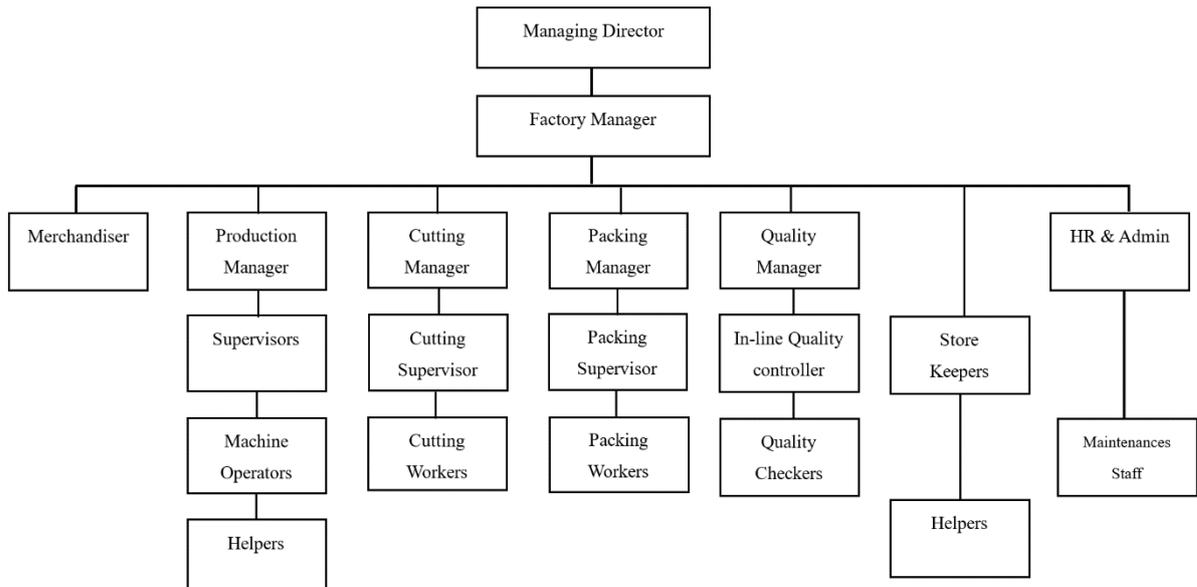
**Organizational Structure- Factory C**



**Source:** Company’s Record

**Appendix 14**

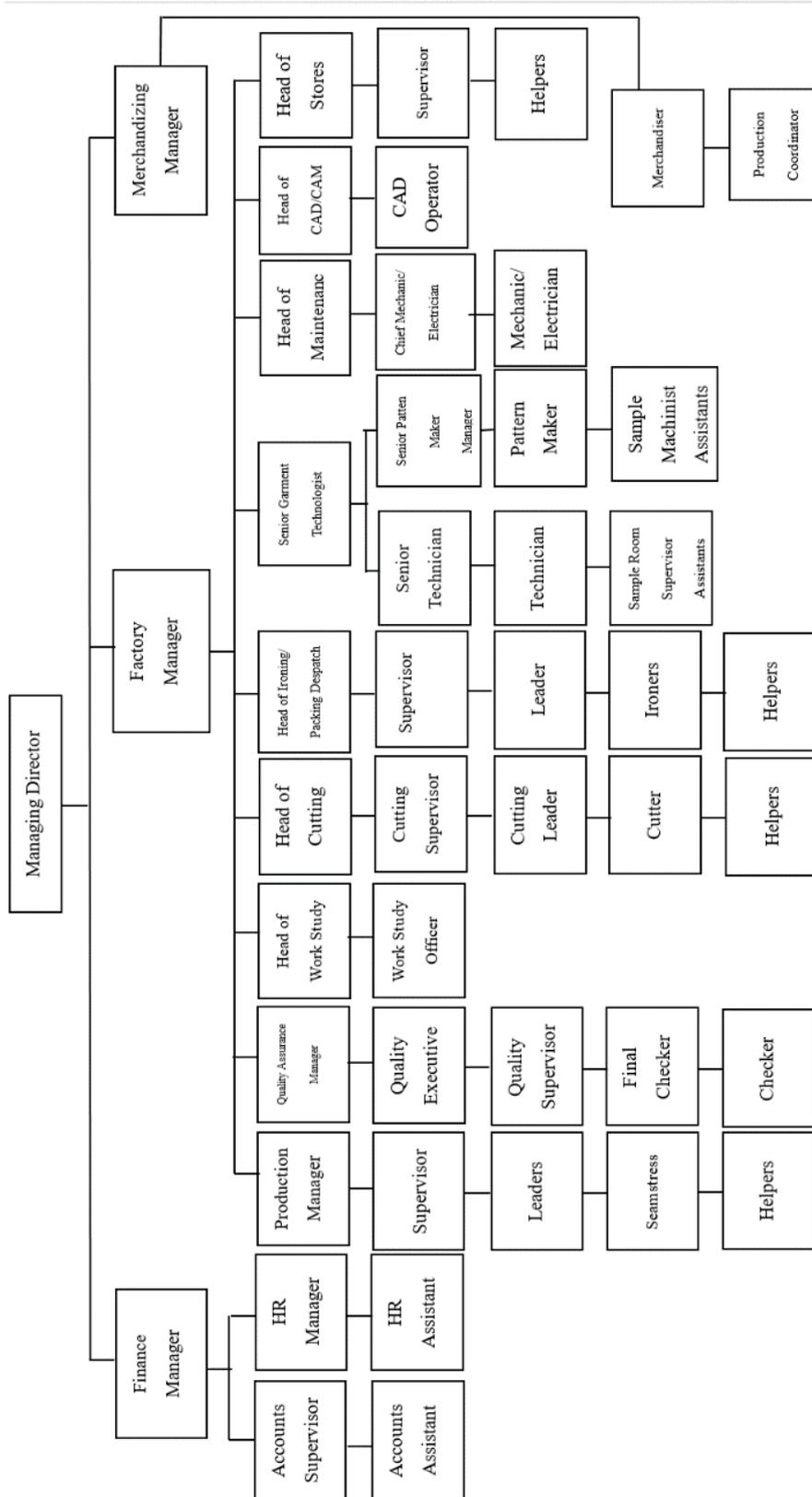
**Organizational Structure- Factory D**



**Source:** Company’s Record

Appendix 15

Organizational Structure- Factory E



Source: Company's Record

## Appendix 16

### Rotated Factor Matrix and other results of Factor Analysis (as one sample)

Factor's name and items	Factor loading		Commonalities
	1	2	
<b>Factor 1: Mutual Support</b>			
If any problem occurred on my work, it is resolved in discussion with my colleagues.	.831		.625
I help my workmates when they have work problems on the line.	.614		.424
In the day of, when I finish my daily work, I may help someone who is not finished.	.560		.358
If I got into difficult at work, my section members help me.	.506		.305
<b>Factor 2: Common Goal</b>			
In my team, we have a clear goal to be achieved as a team.		.669	.477
I know what our team's final goal is.		.636	.385
In my team, we are jointly responsible for workplace results.		.618	.441
<b>Reliability</b>	.72	.68	
<b>Percent of variance explained</b>	41.075	17.695	
<b>Cumulative Percent of variance explained</b>	41.075	58.769	

## Appendix 17

### Rotated Factor Matrix and other results of Factor Analysis (Factory A)

Factor's name and items	Factor loading			Commonalities
	1	2	3	
<b>Factor 1: Mutual support</b>				
If any problem occurred on my work, it is resolved in consultation with my colleagues.	.769			.691
If I got into difficult at work, my section members help me.	.707		.357	.473
In the day of, when I finish my daily work, I may help someone who is not finished.	.618			.472
I help my workmates when they have work problems on the line.	.468	.364		.474
<b>Factor 2: Task Interdependence</b>				
We cannot complete targets unless everyone contributes.		.682		.559
Team members frequently have to coordinate their effort with each other.		.637		.375
<b>Factor 3: Common goal</b>				
I know what our team's final goal is.			.663	.372
In my team, we have a clear goal to be achieved as a team.		.510	.564	.757
In my team, we are jointly responsible for workplace results.			.442	.354
<b>Reliability</b>	.78	.60	.63	
<b>Percent of variance explained</b>	40.886	13.745	11.973	
<b>Cumulative Percent of variance explained</b>	40.886	54.631	66.604	

## Appendix 18

### Rotated Factor Matrix and other results of Factor Analysis (Factory B)

Factor's name and items	Factor loading				Commonalities
	1	2	3	4	
<b>Factor 1: Mutual support</b>					
If any problem occurred on my work, it is resolved in discussion with my colleagues.	.690				.517
If I got into difficult at work, my section members help me.	.640				.431
I help my workmates when they have work problems on the line.	.573				.400
Members of my team share information with other team members about our work.	.365				.322
In the day of, when I finish my daily work, I may help someone who is not finished.	.335				.380
<b>Factor 2: Common goal</b>					
In my team, we are jointly responsible for workplace results.		.736			.596
In my team, we have a clear goal to be achieved as a team.		.644			.470
I know what our team's final goal is.		.581			.413
<b>Factor 3: Multi-skills</b>					
Team members of my team know each other's job.			.632		.459
I can perform more than one task in the team.			.577		.351
<b>Factor 4: Task Interdependency</b>					
I depend on my colleagues for the completion of my work.				.735	.580

Within my team, jobs performed by team members are related to others. .536 .318

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<b>Reliability</b>	.69	.72	.54	.53
<b>Percent of variance explained</b>	29.561	13.424	10.020	9.065
<b>Cumulative Percent of variance explained</b>	29.561	42.986	53.005	62.71

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## Appendix 19

### Rotated Factor Matrix and other results of Factor Analysis (Factory C)

Factor's name and items	Factor loading			Commonalities
	1	2	3	
<b>Factor 1: Mutual support</b>				
If any problem occurred on my work, it is resolved in discussion with my colleagues.	.793		.376	.906
In the day of, when I finish my daily work, I may help someone who is not finished.	.681			.490
If I got into difficult at work, my section members help me.	.567			.315
I help my workmates when they have work problems on the line.	.546	.464		.668
Members of my team share information with other team members about our work.	.490			.371
<b>Factor 2: Common goal</b>				
In my team, we have a clear goal to be achieved as a team.		.552		.384
In my team, we are jointly responsible for workplace results.		.518		.384
<b>Factor 3: Task Interdependency</b>				
I have to obtain information and advice from my colleagues to complete my work.			.638	.476
In order to complete their work, my colleagues have to obtain information and advice from me.			.581	.345
<b>Reliability</b>	.80	.56	.52	
<b>Percent of variance explained</b>	39.475	14.393	11.128	
<b>Cumulative Percent of variance explained</b>	39.475	53.868	64.996	

## Appendix 20

### Rotated Factor Matrix and other results of Factor Analysis (Factory D)

Factor's name and items	Factor loading		Commonalities
	1	2	
<b>Factor 1: Mutual Support</b>			
If any problem occurred on my work, it is resolved in discussion with my colleagues.	.930		.873
I help my workmates when they have work problems on the line.	.726		.547
In the day of, when I finish my daily work, I may help someone who is not finished.	.659		.442
If I got into difficult at work, my section members help me.	.574		.438
Members of my team share information with other team members about our work.	.563		.340
<b>Factor 2: Common Goal</b>			
In my team, we are jointly responsible for workplace results.		.815	.731
I know what our team's final goal is.		.598	.352
<b>Reliability</b>	.78	.65	
<b>Percent of variance explained</b>	43.311	21.887	
<b>Cumulative Percent of variance explained</b>	43.311	65.198	

## Appendix 21

### Rotated Factor Matrix and other results of Factor Analysis (Factory E)

Factor's name and items	Factor loading			Commonalities
	1	2	3	
<b>Factor 1: Mutual Support</b>				
If any problem occurred on my work, it is resolved in discussion with my colleagues.	.739			.672
If I got into difficult at work, my section members help me.	.729			.554
I help my workmates when they have work problems on the line.	.610			.480
Members of my team share information with other team members about our work.	.541			.322
<b>Factor 2: Task Interdependence</b>				
I depend on my colleagues for the start of my work.		.812		.676
Within my team, jobs performed by team members are related to others.		.781		.727
<b>Factor 3: Common Goal</b>				
In my team, we are jointly responsible for workplace results.			.682	.615
In my team, we have a clear goal to be achieved as a team.			.654	.445
<b>Reliability</b>	.73	.77	.60	
<b>Percent of variance explained</b>	36.047	20.572	14.985	
<b>Cumulative Percent of variance explained</b>	36.047	56.619	71.604	

## Appendix 22

### Rotated Factor Matrix and other results of Factor Analysis (Factory F)

Factor's name and items	Factor loading			Commonalities
	1	2	3	
<b>Factor 1: Mutual Support</b>				
If I got into difficult at work, my section members help me.	.721			.558
I help my workmates when they have work problems on the line.	.657			.545
If any problem occurred on my work, it is resolved in discussion with my colleagues.	.552			.346
Members of my team share information with other team members about our work.	.498			.349
In the day of, when I finish my daily work, I may help someone who is not finished.	.416			.437
<b>Factor 2: Multi-Skills</b>				
Team members of my team know each other's job.		.704		.521
I often cover absentee work in my team.		.598		.365
I can perform more than one task in the team		.471		.382
<b>Factor 3: Common Goal</b>				
In my team, we are jointly responsible for workplace results.			.991	.999
I know what our team's final goal is.			.432	.322
<b>Reliability</b>	.75	.66	.53	
<b>Percent of variance explained</b>	35.741	13.830	11.571	
<b>Cumulative Percent of variance explained</b>	35.741	49.571	61.142	

## Appendix 23

### Rotated Factor Matrix and other results of Factor Analysis (Factory G)

Factor's name and items	Factor loading		Commonalities
	1	2	
<b>Factor 1: Mutual Support</b>			
If any problem occurred on my work, it is resolved in discussion with my colleagues.	.732		.508
I help my workmates when they have work problems on the line.	.715		.537
In the day of, when I finish my daily work, I may help someone who is not finished.	.656		.419
Team members frequently have to coordinate their effort with each other.	.622		.369
If I got into difficult at work, my section members help me.	.599		.326
Members of my team share information with other team members about our work.	.522		.414
<b>Factor 2: Common Goal</b>			
In my team, we have a clear goal to be achieved as a team.		.686	.474
I know what our team's final goal is.		.628	.390
<b>Reliability</b>	.80	.61	
<b>Percent of variance explained</b>	39.477	17.602	
<b>Cumulative Percent of variance explained</b>	39.477	57.080	

**Appendix 24**

**Correlation Values of the Aggregated Data Set (including control variables)**

<b>Variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
1.MS	1						
2.CG	.59**	1					
3.Sex	-.05	-.09*	1				
4.Tenure	-.09*	-.13**	.15**	1			
5.Age	-.08*	-.07	.09*	.53**	1		
6.Educ	-.05	-.11**	.09*	.18**	.04	1	
7.Exp_O	.07	.08*	.01	-.29**	-.04	-.24	1

**MS**-Mutual Support, **CG**- Common Goal, **Educ**- Education Level, **Exp\_O**- Previous Work Experience -