A study of motivation and learning in Malaysian manufacturing industry

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\textbf{ABSTRACT}

Problems of motivation and job satisfaction have continued to plague developing countries like Malaysia. The driving factors to motivate employees have frequently been studied, but no correlation between motivation and job satisfaction has been found. The study described here focuses on work motivation and satisfaction together with their relationships with learning behaviours. The main research consisted of an industrial study of 356 employees from manufacturing industries in Malaysia. The study revealed that unskilled employees preferred group working on complex tasks whereas skilled employees preferred to work individually, in both cases increasing motivation and satisfaction. Task complexity was found to be an important factor in job design and learning. Learning in groups was a significant factor in workplace learning for both unskilled and skilled employees. Knowledge of the relationships between motivation and learning is expected to be useful for employers and policy makers in organisations especially in manufacturing industries in Malaysia.

\section{1. Introduction}

This paper is aimed at discovering how employees’ motivation and satisfaction relate to their learning behaviours while doing certain tasks. The research study explored employee motivation and satisfaction among unskilled and skilled employees in manufacturing industries in Malaysia. With increasing technology and globalisation, many organisations, especially in developing countries, have problems keeping their employees motivated and satisfied. Hence, it is important to explore motivation and satisfaction to find good solutions for human resource management, managers, policy makers, practitioners, etc. (Mat, Case, & Mohammadan, 2015).

The literature review of Section 2 introduces the principle literature related to motivation, satisfaction and learning behaviour. Motivation and satisfaction are discussed with reference to content and process theories and learning behaviour is discussed in the context of
individual/team learning, skill variety and task identity (complexity). Research questions related to the three aspects of work motivation, work satisfaction and learning are stated in Section 3. A laboratory study of simple/complex tasks and individual/team working for skilled/unskilled employees is presented as Section 4. The industrial questionnaire study of Section 5 also considered simple/complex tasks and individual/team working for skilled/unskilled employees. The results of both the laboratory and industrial studies were analysed in relation to work motivation, work satisfaction and learning as expressed in the research questions. The discussion and conclusions of Sections 6 and 7 highlight the main findings and suggest ways in which the information might be important in manufacturing industries.

The key contributions of this study are (in the context of manufacturing industries in developing countries like Malaysia): (1) improved knowledge and understanding of motivation and satisfaction theories (2) it is one of the few studies that relates motivation and satisfaction as well as learning behaviours in job design (3) useful input to employers and policy makers (4) a recognition of the need for task design, especially task identity and skill variety.

2. Literature review

Motivating the employees in an organisation to perform efficiently towards the direction of its goals is probably the most important task in work management. An organisation motivates employees to perform effectively by giving them rewards for their effectiveness and possibly punishment for poor performance.

Motivation and satisfaction theory has been explored for over a hundred years. The research began with a scientific study by Taylor in 1911 which found that employees do work to enhance their performance and productivity (Taylor, 1911). Since then many theories and models have been developed to describe the complex behaviours of motivation and satisfaction (Locke, 1983).

2.1. The meaning of motivation

Motivation can be described as the internal factors that drive an individual’s actions and behaviours to achieve certain goals. This drive or urge begins from the need to satisfy some necessities and expectations (Mullins, 2005). Motivation in work organisations also can be defined as ‘the processes by which individuals are enabled and induced to choose to behave in particular ways’ (Johnson & Gill, 1993).

Many definitions have been suggested to characterise job satisfaction. The basis of the definition of job satisfaction is the state when an individual has a positive feeling towards his employment. Vroom (1964) proposed a straightforward definition and utilized the term ‘job satisfaction’ and ‘job attitude’ to indicate ‘effective orientation with respect to the individual towards work roles which they are currently occupying’.

Job satisfaction is always considered to be one of the most significant drivers of quality, productivity and customer satisfaction. Many studies have shown that employees who are satisfied with their job are highly motivated, have good attitudes at work and work effectively and efficiently. It is important to identify the drivers of employee satisfaction and to monitor and measure satisfaction continuously to foster satisfaction and loyalty in a firm (Matzler & Renzl, 2006).
2.2. Theories of motivation and satisfaction

2.2.1. Content theories

Content theories generally deal with ‘what’ motivates people and are related to individual needs and goals. They are mainly concerned with what motivates people, and what kind of rewards can increase peoples’ satisfaction and performance. The content theories include Maslow’s Need Hierarchy, Herzberg’s Two Factor Theory and Alderfer’s Existence, Relatedness and Growth (ERG).

2.2.1.1. Maslow’s theory. Maslow (1954) described a need hierarchy theory. He described motivation to be a continuity of changing desire to satisfy different needs and believed that human needs were developed in a rank position in a hierarchy. He found that in a working situation, individuals tend to go for higher needs when their basic needs are met and he believed that individuals in the organisations have needs that grow and develop. When the needs at one level have been fulfilled they will not act as motivators anymore and then he/she moves to the next level of the needs. Lower-order needs are dominant until they are fulfilled, then the next level needs would come into operation. Maslow suggested that there are five different levels of need in the hierarchy; physiological, safety and security, social and love, esteem, and self-actualization.

Maslow’s theory is still very popular among researchers and practitioners because it is very simple to present and easy to understand (Benson & Dundis, 2003). This theory inspired many researchers and practitioners and it has proven and produced many management approaches and policies as well as being a very useful theory for generating managerial ideas (Huczynski & Buchanan, 2001).

Maslow’s theory however, has received weak or no empirical support and Buchanan and Huczynski (2004) argue that Maslow’s theory has unclear ideas and is unable to voluntarily determine the behaviours of individuals and thus the theory is culture dependent.

2.2.1.2. Herzberg’s theory. The motivation-hygiene theory was first developed by Herzberg (1966) and differentiates between ‘hygiene’ and ‘motivator’ factors of motivation. A hygiene factor is identified as a factor which if lacking leads to dissatisfaction but does not in itself lead to job satisfaction while motivator factors operate to increase job satisfaction (Hansen, Smith, & Hansen, 2002). Hygiene factors are related to the work conditions and basically are connected with dissatisfaction. For instance, the hygiene factors include salary, company policies, employment security, relationships with supervisors and colleagues, and working environments. On the other hand, the motivators or satisfiers commonly relate to individual growth and self-actualization and they are tied to satisfaction with work. Some of the motivator factors such as job nature, achievement, recognition, and responsibility in the organisation contribute to employee’s satisfaction when present (Lewis, Lewis, Packard, & Souflee, 2001).

2.2.1.3. Alderfer’s ERG theory. The ERG theory was developed as a reformulation of Maslow’s need hierarchy theory. ERG is a motivational concept concerned with understanding the factors that contribute to human behaviour. Alderfer (1972) stated that Maslow’s theory could be combined into the three main categories of ERG. The ‘Existence’ need in this theory refers to basic physiological needs for existence such as the items in
Maslow’s physiological and safety need (need for food, shelter, water, safety and security). The ‘Relatedness’ group is the need for individual relations with superiors and colleagues in the work environment and is similar to the social needs and the external part of the need for esteem in Maslow’s theory. ‘Growth’ needs are related to the development of the potential of individuals (Steers, Porter, & Bigley, 1996). Growth needs consist of the intrinsic needs for the development of individuals and the intrinsic component of the esteem category in Maslow’s theory and also self-actualisation needs such as individual creativity, challenging work, recognition, achievement, etc. The ERG theory has been applied in the study of human motivation in the workplace as a measure to increase individual morale and performance as well as the organisation’s productivity.

2.2.2. Process theories
Process Theories deal with the ‘process’ of motivation and are concerned with the ‘how’ of motivation. This section describes three useful process theories known as the Equity (Adams, 1963), Expectancy (Vroom, 1964), and Goal-Setting (Locke, 1968) theories.

2.2.2.1. Equity theory. The motivation Equity theory refers to the quality and quantity of the employees’ contributions to their work. This theory is concerned with an individual or group of people that compare the ratio of inputs to outcomes at work relative to those of others. Three factors are used to understand motivation in this theory; inputs, outcomes and referents (Adams, 1963). The things that the individual brings to the job are considered as inputs. Input factors can be age, skills, effort, loyalty, commitment, enthusiasm, etc. Outcomes can be described as the things that an individual perceives in their work as consequences of their relationships with others. Typical examples of outcome factors are pay, recognition, job security, benefit, reputation, etc. The last factor is referent in that it is the focus of comparison between the individual and another person.

2.2.2.2. Expectancy theory. Vroom (1964) developed the expectancy theory that produces a systematic explanation of workplace motivation in organisations. He stated that the behaviour of motivation is created by an individual’s anticipation and leads to a specific outcome. This theory has been widely used in organisational management to describe employees’ behaviours in working environments (Steers et al., 1996). Vroom did not agree that individuals require several needs to be satisfied as formulated in content theories (Alderfer, 1972; Herzberg, 1966; Maslow, 1954; McClelland, 1961).

2.2.2.3. Goal-setting theory. Locke (1968) developed the goal setting theory that proposed that the motivation and performance of an individual was caused by their intention to perform (Locke & Latham, 1984). The work motivation and performance of individuals will increase if they have a specific set of goals to achieve. Locke (1968) defined a goal as what a person is trying to accomplish or intends to do. Specific and challenging goals with appropriate feedback will result in better outcomes and performance.

2.3. Learning behaviour
The workplace is always seen as a place to work, goods are produced and services are offered. It is not a learning place. Generally, learning happens before employment takes place or it
can be part of preparation, an internship or a training period. Nowadays, the demands of work have become more complex due to job changes, the emergence of new technologies and the creation of new opportunities. These involve learning and re-learning. Learning can generally be seen as a normal process for a human throughout life, stimulated by the existence of daily actions and challenges. Learning happens every day, everywhere for instance at home, during work or at leisure.

It is therefore significant for individuals and organisations that when finished with their formal or professional education, they continue learning particularly in the workplace and throughout their career. Due to the complexity and robust growth of information technologies, the use of an efficient organisation is becoming increasingly important. Until recently, it was found that human resources mainly focused on proper learning and training, even though work challenges and interaction with colleagues are also significant learning sources for employees in the workplace (Poell, van Dam, & van den Berg, 2004).

Employees need to participate in learning at the workplace because their competencies and abilities at work are always changing and it is more and more important for them to survive in the more challenging environment. It has been seen that organisations know that their utmost asset is the capital knowledge of their employees; however organisations are not necessarily able to ensure job security and career opportunities, and therefore it is important for employees to show their capability and employability in other places. Employees also need to improve their knowledge and skills to be marketable in the labour market. Parker and Wall (1998) found that learning in organisations leads to the development of greater orientation of roles in the workplace and increased self-efficacy, and this may result in higher job satisfaction and commitment to the organisation, as well as reducing leaving intentions and stress rates.

Employees are also encouraged to learn effectively by continuously learning new challenges in the workplace and should also learn to recognise skills gaps that may affect employment and change the skill requirements in organisations. Therefore, employees should always take part in learning and training in their organisations so as to improve and enhance their competencies and capabilities to their advantage in career development.

2.3.1. Individual learning

To continue to be successful and competitive in a challenging world, organisations should be continuously developing and learning. Organisational learning involves the participation of individuals and the organisation in continuous processes of reviewing and sharing past experiences in the workplace. Therefore, future activities and plans should be developed appropriately so that they can be achieved effectively. The ability of organisations to learn should be created at the individual level. The theory of individual learning can also be recognised as cognitive learning theory that has inspired many researchers in the organisational learning literature (Brandi & Elkjaer, 2011).

A combination of willingness, self-regulation and the capability to grab any chances in the organisation stimulate the accomplishment of any task in the organisation. Individual learning can be defined as the way that individuals obtain new knowledge, attitudes, concepts and experience which includes individuals’ characteristics and skills. Individual learning can also be defined as an individual process to take the advantages, with or without assistance of others, to identify the learning needs, goals, resources, strategies, and assess the learning outcomes (Knowles, 1975). Individuals need to be aware that involvement in
many different tasks throughout the learning path is needed in order to accomplish the learning goals and generally he/she will identify and analyse new needs for learning and then develop new learning goals (Jossberger, Brand-Gruwel, Boshuizen, & van de Wiel, 2010) from which he/she acquires competencies, abilities, and personal traits that are necessary in the organisation.

Knowles (1975) claimed that individual learning consists of the capability to decide with or without other peoples’ help, to be able to identify learning needs, to show learning achievements, to execute learning strategies and to evaluate learning outcomes. Adams (2006) said that individual learning should have several characteristics, such as a need to learn continuously, a responsibility for their own learning, the capability of learning how to learn, knowledge and skills that relate to technologies, strategies to ensure effective learning, self-development skills, thinking skills, etc.

2.3.2. Team learning

The team learning concept has been studied in theory and practice and Senge (1990) claimed that team learning is an important component in organisation learning. In the years after his book was published, there was a growth in research in this subject in various disciplines (Decuyper, Dochy, & Van den Bossche, 2010). Team learning has been influenced positively by different views and function levels in organisations such as individual, team and organisation levels. Team learning influences the individuals in the team and also enhances individual learning, self-efficacy and motivation.

Team learning can be described as a process of interaction between members in the team during organising and integrating interdependent actions or responses through verbal, intellectual and behavioural activities to manage the effective working team and build significant team output (Marks, Mathieu, & Zaccaro, 2001). When the learning process is engaged, the team will focus by interaction of members on learning to work cooperatively and their willingness to function efficiently in the team in, for example, work routines, definition of roles and allocation of problems. When this interaction is present in the team it will help in reaching team goals. Another issue in team learning is that social learning is also significant to the goal achievement. This happens when the individual learns about personal facts of other members in the team (including personal life, habits and character) that enhance understanding and familiarity between other members’ purpose and attitudes. It also may create sympathy and facilitate social interaction in the team resulting in higher team effectiveness and efficiency (Huckman, Staats, & Upton, 2009; Jehn & Rupert, 2008).

It can be concluded that the definition of team learning by Senge (1990) is mostly relevant to this study by defining team learning as a process to align and develop team capability to create the desired outcomes. Senge also suggested that successful team learning is based on three conditions; the need to understand deeply about difficult issues, the need for innovative collective action, and the team member’s role in other teams to ensure that learning in a team can be shifted to other teams in the organisation.

2.3.3. Skill variety

In organisations, it is often believed that to enhance employee well-being employers should let employees do what they are good at and ensure that they practice their abilities and skills in the workplace. van Ruysseveldt and van Dijke (2011) discovered that employees who demonstrate their abilities and skills are reported as having higher well-being levels,
increased satisfaction, more commitment and increased productivity. Skill utilization can be referred to as the opportunity of an employee to use their job skills in the working process and is considered to be one of the core control components that are able to enhance work motivation and reduce stress. The concept of skill utilization as a job resource in the job demand resources model is useful in order to reduce job demand and other costs related to physiological and psychological factors, and it can lead to achieving organisational goals as well as stimulating personal growth and learning. Therefore skill utilization is described as being motivating and significantly related to engagement with work at the workplace.

The opportunity of employees to demonstrate their skills and abilities, may lead to development of their skills and learning, resulting in reduced stress and enhanced well-being, thus satisfying basic psychological needs of relatedness, autonomy and most significantly of their competency. Van den Broeck, Vansteenkiste, De Witte, and Lens (2008) described how fulfilment of a basic need can be a nutrient to offset stress and improve employee well-being, in a similar way that food and water are key individual requirements (Deci & Ryan, 2000). In addition, skill variety is significant in keeping the employee from psychological pain and enhancing well-being.

2.3.4. Task identity (task complexity)

A simple task or less complex task can be described as one where there are few alternative choices in which the individual may engage in accurate decision-making compared to higher task complexity with more alternatives. Individuals may employ incorrect or less accurate decisions to screen all of the available alternatives and also use a more effortful decision strategy to evaluate the reduced set of alternatives in the complex task.

Complexity can be defined as how difficult it is to finish the task in the given context and considers both the task itself and the environment in which it is to be completed (Rasmussen, Standal, & Laumann, 2015). Human errors may occur when the task becomes complex. Complexity considers the required mental effort such as performing mental calculations, understanding the fundamental model of how the system works, and relying on knowledge instead of training or practice. It also can refer to the physical effort required such as difficult physical activities due to complicated patterns of movement (Rasmussen et al., 2015).

In short, task complexity can be described in four different theoretical frameworks that were proposed by Hackman (1969) that described the tasks (i) in stimuli–response expressions (‘task qua task’), (ii) as a set of behaviours that are needed to perform a certain task, (iii) as a set of consequent behaviours, and (iv) as a set of capabilities needed to perform the task.

2.4. Summary of literature review

Motivation and job satisfaction are important areas in management literature due to their importance in maintaining human behaviour in successfully achieving goals in organisations. This literature review has presented the main considerations in motivation and job satisfaction along with related topics. The well-known theories were described and categorised into the two groups of content and process theories. Content theories include Maslow’s hierarchy theory, Herzberg’s hygiene-motivators theory, Alderfer’s ERG theory and McClelland’s needs theory. The process theories include Adams’ equity theory, Vroom’s expectancy theory and the goal-setting theory that was developed by Edwin Locke.
A broad understanding of motivation and satisfaction are important to complete the experimental and industrial studies and are fundamental in exploring the motivation and satisfaction of unskilled and skilled employees in manufacturing industries. Maslow’s theory has made a significant contribution to the study described later in this paper, through the social and self-actualization needs. The social needs can be achieved through working individually or in a group while self-actualization needs involve the development of individual potential, for instance the capability to perform challenging tasks. The Aldefer ERG theory was also found to be useful in this research where ‘Relatedness’ shows the need for individuals to interact with superiors and colleagues and ‘Growth’ is related to the development of individual potential in the organisation such as doing simple tasks in a group or doing complex tasks individually by either unskilled or skilled individuals.

Learning behaviour in organisational management has become a heavily researched topic and knowledge of behaviours is important in order to design jobs in manufacturing workplaces effectively. Interest in on-the-job learning where learning is included in the task has been increasing over many years. The main issues about employees’ learning behaviours begin with an understanding of workplace learning which can also be recognised as organisational learning. Workplace learning can be seen as a process that employees use in their organisation to gain knowledge, aptitudes and skills to finish the organisational task and achieve satisfactory outcomes in terms of performance of both the individual and the organisation. Individual and team learning has been briefly discussed, and can be viewed as the capability of deciding with or without other peoples’ help, to identify learning needs, to show learning achievements, to execute learning strategies and to evaluate learning outcomes. Team learning is the set of activities that team members pursue to obtain, share, enhance or combine knowledge that is task-relevant by interaction with other members of the team.

Learning in teams for both unskilled and skilled employees is a very significant factor in manufacturing workplace learning. Team learning has a positive influence on different aspects and levels such as individual-team-organisation. Team learning enhances the development of a team’s vision and goals, improves skill and knowledge of other team members and enhances the performance of the team. It also has a positive influence on individual learning and enhances self-efficacy and motivation in the workplace.

One of the most important job characteristics theories was developed by Hackman and Oldham (1980). This theory is important in job design as it has contributed to the understanding of psychological behaviours and characteristics with resulting enhancements to outcomes as well as the success of many organisations. In work design five job characteristics are defined, including the two interesting aspects of skill variety and task identity (complexity). Task complexity can be defined as the difficulty of the work in terms of completing the specific tasks that involve a quantity of knowledge using possible alternatives to accomplish the task. Skill variety and task complexity are important factors in job design for both unskilled and skilled employees and are also significant in learning processes for employees in manufacturing industries.

3. Research questions

Although interest has slackened somewhat in the areas of motivation and satisfaction as it relates to western industries, the Malaysian context has not previously been fully considered.
The rapid industrialisation of Malaysia forms the context for this study which is aimed at investigating research questions related to:

(1) Work motivation
(2) Work satisfaction
(3) Learning

In each case the question was considered in relation to task complexity (simple, complex), competency level of subjects (unskilled, skilled) and style of working (individually, in a group). The research questions are identified in Table 1.

### 4. Experimental study

#### 4.1. Introduction

The first main experimental study was based on the methods and questionnaire of earlier pilot studies and 20 technical staff in the Department of Mechanical and Manufacturing Engineering, Universiti Malaysia Sarawak (UNIMAS) participated in the study.

#### 4.2. Aims of the study

The main aim of the experimental study was to identify the motivation and satisfaction of unskilled and skilled employees doing simple or complex tasks either individually or in groups. The results of this study were analysed using the Mann–Whitney U statistical method to test 15 research questions that relate to work motivation and satisfaction as well as learning behaviours of unskilled and skilled employees.

#### 4.3. Experimental set-up

A total of 20 technical staff (16 males and 4 females) were divided into four groups where group 1 consisted of unskilled/semi-skilled subjects doing simple tasks, group 2 consisted of skilled subjects doing simple tasks, group 3 consisted of unskilled/semi-skilled subjects doing complex tasks, and group 4 consisted of skilled subjects doing complex tasks.

| Table 1. Research questions. |
|------------------------------|
| **Work motivation**          |
| RQ1a | Will doing simple tasks individually increase work motivation? |
| RQ1b | Will doing complex tasks individually increase work motivation? |
| RQ1c | Will doing simple tasks in a group increase work motivation? |
| RQ1d | Will doing complex tasks in a group increase work motivation? |
| RQ1e | Is there any difference between unskilled and skilled subjects in their motivation? |
| **Work satisfaction**        |
| RQ2a | Will doing simple tasks individually increase work satisfaction? |
| RQ2b | Will doing complex tasks individually increase work satisfaction? |
| RQ2c | Will doing simple tasks in a group increase work satisfaction? |
| RQ2d | Will doing complex tasks in a group increase work satisfaction? |
| RQ2e | Is there any difference between unskilled and skilled subjects in work satisfaction? |
| **Learning**                 |
| RQ3a | Will learning by doing simple tasks increase work motivation and satisfaction? |
| RQ3b | Will learning by doing complex tasks increase work motivation and satisfaction? |
| RQ3c | Will learning by doing simple tasks individually increase work motivation and satisfaction? |
| RQ3d | Will learning by doing complex tasks individually increase work motivation and satisfaction? |
| RQ3e | Is there any difference between unskilled and skilled subjects in their learning behaviours? |
doing complex tasks and group 4 consisted of skilled subjects doing complex tasks. All of the subjects were aged between 25 and 45 years. The majority were certificate/diploma holders and were identified as unskilled or skilled workers on the basis of the number of years of working experience.

The experiment was carried out in a closed laboratory where only the researcher and subjects were present. The surroundings of the room were identified as clean with comfortable temperatures so as not to affect concentration while doing the tasks. The experiment was carried out on a table and the materials and instructions were placed in front of the subjects. There were two different sets of tasks designed in line with the complexity of the assigned task. Before the test, the procedures of the study were briefly explained to the subjects. The purposes of this study were also explained and subjects were asked to complete the consent form to become a subject or they could refuse as this was a voluntary study. Once they willingly participated, they were given an instruction paper and a set of LEGO Mindstorms as well as questionnaire papers. They were asked to fully understand the instructions and task and also they were given ample time to explore the LEGO Mindstorms before the test began. (LEGO Mindstorms are commercially available kits of hardware and software that can be used to build model robots).

At the start of the test, subjects were required to build a LEGO Mindstorms robot as in the instruction manual. Subjects were required to follow the manual step-by-step, and the task was repeated five times. Time taken and the number of errors were recorded and on the completion of the five trials, subjects were required to answer a questionnaire where most of the questions were related to their motivation, satisfaction and learning behaviours while doing the given task.

4.4. Data analysis

This section discusses the relationships between work motivation, satisfaction and learning behaviours of unskilled and skilled employees either doing simple or complex tasks individually or in groups.

4.4.1. Work motivation

Table 2 shows the level of work motivation when unskilled and skilled employees do simple and complex tasks individually. Both unskilled and skilled employees preferred to do simple and complex tasks individually, as the majority found that this increased their work motivation.

Table 2. Level of work motivation.

| Research question | Style of working | Task   | Competency | Strongly disagree (%) | Disagree (%) | Neutral (%) | Agree (%) | Strongly agree (%) |
|-------------------|------------------|--------|------------|----------------------|--------------|-------------|------------|-------------------|
| RQ1a              | Individually     | Simple | Unskilled  | 0                    | 0            | 20          | 20         | 60                |
| RQ1b              | Individually     | Complex| Unskilled  | 0                    | 0            | 0           | 40         | 60                |
| RQ1c              | Group            | Simple | Unskilled  | 0                    | 0            | 0           | 60         | 40                |
| RQ1d              | Group            | Complex| Unskilled  | 0                    | 20           | 0           | 60         | 20                |
Table 2 also shows the level of work motivation when unskilled and skilled employees do simple and complex tasks in a group. All unskilled employees strongly agreed that doing simple tasks in groups increased their work motivation. Skilled employees also felt that doing simple tasks in a group increased work motivation. Unskilled employees felt that working in a group on complex tasks increased work motivation, while 20% of skilled employees disagreed that doing complex tasks in a group increased work motivation.

Table 3 shows that there was no significant difference in work motivation for unskilled and skilled employees doing simple or complex tasks individually or in a group.

### 4.4.2. Work satisfaction

Both unskilled and skilled employees felt that doing either simple or complex tasks individually increased work satisfaction (Table 4). Both unskilled and skilled employees were also agreed that doing simple tasks in a group increased work satisfaction.

There were no significant differences in work satisfaction between unskilled and skilled employees doing simple or complex tasks individually or in a group (Table 5). Both unskilled and skilled employees were agreed that doing simple tasks in a group increased their work satisfaction.

### 4.4.3. Learning behaviours

Table 6 shows that the learning behaviours of unskilled and skilled employees doing simple and complex tasks increased work motivation and satisfaction. It was found that unskilled and skilled employees learnt by doing simple tasks individually and that this increased their work motivation and satisfaction. Both unskilled and skilled employees also agreed that learning by doing complex tasks increased their work motivation and satisfaction. However, it was found that only 50% of unskilled employees agreed that learning by doing complex tasks individually increased their work motivation and satisfaction.

There was no significant difference in doing simple and complex tasks by unskilled and skilled employees. However, there was a significant difference in that most skilled employees preferred to do complex tasks individually compared to unskilled employees (Table 7).

### 4.5. Summary

Statistical analysis was performed using Mann–Whitney U methods to measure the constructed research questions relating to work motivation and satisfaction as well as learning behaviours of unskilled and skilled employees. From the analysis, it was found that unskilled employees were motivated and satisfied when doing simple tasks individually or in a group.

| Research question | Style of working | Task   | p-Value | Competency | Mean rank | Significance     |
|-------------------|------------------|--------|---------|------------|-----------|-----------------|
| RQ1e              | Individually     | Simple | .811    | Unskilled  | 5.70      | Not significant |
|                   | Individually     | Complex| 1.000   | Unskilled  | 37.94     | Not significant |
|                   | Group            | Simple | 1.000   | Unskilled  | 5.50      | Not significant |
|                   | Group            | Complex| .339    | Unskilled  | 6.30      | Not significant |

*p-Value less than .05 is significant.*
Skilled employees also agreed that they were motivated and satisfied when doing complex tasks individually or in a group. Finally, unskilled employees learnt by doing simple tasks in a group and skilled employees learnt by doing complex tasks individually. These findings are in agreement with the 'Growth' needs in the ERG motivation theory and are related to the
development of individual potential (Steers et al., 1996). This consists of the intrinsic needs for the development of individuals and the intrinsic component of the esteem category in Maslow's theory (1954) and also self-actualisation needs such as individual creativity and a challenging work (task complexity). These factors reflect individual potential and work organisation. The satisfaction of growth needs depends on the opportunity for an individual to be what he/she wishes to be and to become what he/she could (Alderfer, 1972).

5. Industrial study

The industrial study was conducted in selected manufacturing industries in Malaysia including supply, automotive, electronics/electrical, machining, services and computing industries. The same questionnaires as used in the experimental study were distributed to selected manufacturing industries in Malaysia. Respondents were asked to complete the hard copy or online questionnaires that were sent through email or via human resources managers/advisors.

The targeted respondents for the industrial study were of various ages and either unskilled or skilled employees. The questionnaires were focussed on their tasks in their current position in the company and sought to discover how their position affected work motivation and satisfaction. The completed questionnaires were analysed using statistical methods to validate the findings as well as to find the relationships of work motivation and satisfaction between unskilled and skilled employees when doing simple or complex tasks individually or in groups.

5.1. Data analysis

5.1.1. Demographic and descriptive data

The total number of respondents was 356 (247 males and 109 females), aged 18 to 54 years. Half the respondents had degrees and half had A-levels, certificates or diplomas, 196 were skilled and 160 unskilled and approximately equal numbers worked individually (175) or in groups (181). The respondents were employees of a wide variety of companies including industrial supply, services, automotive, machining, computing and electrical and held engineering supervisory or general operator posts.

5.1.2. Work motivation

Table 8 shows the results from 5-point Likert scales in the questionnaire concerned with level of work motivation.

Nearly all combinations of style of working, task and competency resulted in levels of motivation above 50% (agree and strongly agree), the only exception being skilled employees working in a group on simple tasks where perhaps unsurprisingly the level fell to 46.7%. The highest level of motivation (86.0%) involved skilled employees tackling complex tasks individually. Group working on complex tasks by unskilled employees (78.2%) and by skilled employees (70.2%) generated high levels of motivation. Conversely, lack of motivation (disagree and neutral) was greatest for simple tasks.

There was no significant difference in work motivation between unskilled and skilled employees doing either simple or complex tasks individually as reported in Table 9.
The values of mean rank for simple tasks increasing work motivation were 46.61 and 51.65 for unskilled and skilled employees respectively. The mean ranks for complex tasks increasing work motivation by unskilled or skilled employees were 37.94 and 41.72 respectively. The similarity of these mean ranks, further confirms that there are no significant differences between unskilled and skilled employees doing either simple or complex tasks in groups rather than individually. Table 9 also confirms that there are no significant differences between the motivation of unskilled and skilled employees when performing simple or complex tasks in groups.

### 5.1.3. Work satisfaction

Table 10 shows the level of work satisfaction for unskilled and skilled employees when doing either simple or complex tasks individually. Less than half of the unskilled employees agreed or strongly agreed that doing simple tasks individually increased their work satisfaction. It
was also found that there were no differences in work satisfaction between unskilled and skilled employees doing simple tasks individually. However, most unskilled and skilled employees agreed or strongly agreed that doing complex tasks individually increased their work satisfaction.

Table 10 also shows the level of work satisfaction for unskilled and skilled employees doing simple and complex tasks in groups. Half of unskilled and skilled employees were neutral that doing simple task in groups increased their work satisfaction. Neither skilled nor unskilled employees felt that doing simple tasks in groups increased work satisfaction. It was also found that both unskilled (76.1%) and skilled (64.9%) employees agreed that their work satisfaction increased when doing a complex task in groups.

Table 11 shows the results of a Mann–Whitney \( U \) test between unskilled and skilled employees doing simple or complex tasks individually. There were no significant differences and the mean ranks were also similar to each other. Similarly there were also no significant differences between unskilled and skilled employees doing simple and complex tasks in groups.

### 5.1.4. Learning behaviours

This section is about the learning behaviours of unskilled and skilled employees and their preferences for doing simple or complex tasks. They also were asked to choose whether doing simple or complex tasks individually would increase work motivation and satisfaction.

Skilled employees preferred learning by doing simple tasks and this increased work motivation and satisfaction (Table 12). However, unskilled and skilled employees agreed that they learnt by doing complex tasks and this increased work motivation and satisfaction. Only half of the unskilled employees agreed that learning by doing complex tasks individually increased their work motivation and satisfaction. More than half of the skilled employees did not agree or were neutral that learning by doing complex tasks individually increased their work motivation and satisfaction.

There were no significant differences between unskilled and skilled employees that learning by doing complex tasks increased work motivation and satisfaction (Table 13). The mean rank value for unskilled employees (139.27) was more than skilled employees (119.73). However, there were no significant differences between unskilled and skilled employees in terms of their learning behaviours by doing simple and complex tasks individually as the mean rank values for both groups are similar.

| Table 11. Mann–Whitney \( U \) test of work satisfaction between unskilled and skilled employees. |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Research question | Style of working | Task | \( p \)-Value* | Competency | Mean rank | Significance |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| RQ2e | Individually | Simple | .406 | Unskilled | 46.78 | Not significant |
| | | | | Skilled | 51.65 | |
| | Individually | Complex | .755 | Unskilled | 39.24 | Not significant |
| | | | | Skilled | 40.64 | |
| | Group | Simple | .507 | Unskilled | 36.78 | Not significant |
| | | | | Skilled | 40.32 | |
| | Group | Complex | .592 | Unskilled | 53.64 | Not significant |
| | | | | Skilled | 50.68 | |

*\( p \)-Value less than .05 is significant.
5.2. Summary

In summary, unskilled employees preferred to do complex tasks in a group. However, skilled employees preferred to do complex tasks individually rather than in groups, and this increased work motivation and satisfaction. Both unskilled and skilled employees agreed that they learnt by doing simple and complex tasks respectively. However, they did not agree that they learnt by doing simple tasks individually and complex tasks individually. It was found that both groups learnt by doing tasks in groups. These findings showed that learning in a team could be a very significant factor in workplace learning. Team learning has a positive influence on different aspects and levels such as individual–team–organisation (Sweet & Michaelsen, 2007) and it enhances the development of a team’s vision and goal, improves the skill and knowledge of other team members and enhances the performance of the team (Boon, Raes, Kyndt, & Dochy, 2013; Veestraeten, Kyndt, & Dochy, 2014).

6. Interpretation and discussion

Table 14 shows that more than half of the unskilled employees agreed that doing simple and complex tasks individually increased their motivation levels. However, it was found that about a quarter of the unskilled employees either disagreed or were neutral that doing simple and complex tasks individually increased their work motivation. This indicates that unskilled employees preferred doing either simple or complex tasks in groups rather than individually. The results also showed that skilled employees preferred doing complex tasks individually and in groups as this increased their work motivation.
However, a Mann–Whitney $U$ test revealed that there were no significant differences between doing simple and complex tasks individually or in groups by unskilled and skilled employees in terms of increased work motivation.

It was found that less than half of unskilled employees agreed that doing simple tasks individually or in a group increased their work satisfaction as shown in Table 15, while there is a strong indication that skilled employees preferred doing complex tasks individually or in groups. This indicates that both unskilled and skilled employees preferred doing complex tasks individually or in a group and this increased their work satisfaction.

However, statistical analysis showed that there were no significant differences between unskilled and skilled employees doing either simple or complex tasks in terms of increasing work satisfaction.

Table 16 is a summary of learning behaviours for unskilled and skilled employees learning by doing simple or complex tasks individually showing that this increased work motivation and satisfaction. Both unskilled and skilled employees were asked about their preferred learning behaviours – doing either simple or complex tasks. The results showed that unskilled employees preferred learning by doing simple tasks and this increased work motivation and satisfaction. However, less than half of unskilled employees found that learning by doing simple tasks individually increased work motivation and satisfaction. Also less than half of skilled employees agreed that they learnt by doing complex tasks individually and that this increased their work motivation and satisfaction.
It was found that there were no significant differences between unskilled and skilled employees and that both groups preferred learning by doing simple tasks individually increasing work motivation and satisfaction. However, there was a significant difference between unskilled and skilled employees that learning by doing complex tasks increased work motivation and satisfaction. It was found that unskilled employees agreed that they learnt by doing complex tasks and this increased work motivation and satisfaction.

The summary of results in Table 17 shows that unskilled employees preferred doing complex tasks in a group rather than doing simple tasks. The majority were agreed that doing complex tasks in a group would increase their work motivation and satisfaction. It was also found that skilled employees preferred doing complex tasks individually rather than in a group. Both skilled and unskilled employees disagreed that doing simple tasks increased their work motivation and satisfaction. Figure 1 shows the main findings between unskilled and skilled employees doing simple and complex tasks respectively either individually or in a group. The figure also represents the workplace learning model that was created as a result of the main findings.

The workplace learning model as shown in Figure 1 begins with the skill variety and task identity that are among the five specific job characteristics described by Hackman and Oldham (1980). In designing jobs in organisations, these two elements are extremely important and contribute to several psychological states and these characteristics may improve the outcomes in the workplace (Hackman & Oldham, 1980). Therefore, these elements are very important in understanding the basic needs of unskilled and skilled employees especially in designing tasks, where the findings show that unskilled employees preferred to perform complex tasks in a group while skilled employees favoured doing complex tasks individually.
For learning behaviours, unskilled employees learnt by doing simple tasks and this increased their work motivation and satisfaction. However, skilled employees learnt by doing complex tasks and this increased their work motivation and satisfaction. It was also reported that both unskilled and skilled employees did not learn by doing simple tasks individually. Based on these findings, it has been shown that task identity (task complexity) can be an important factor in job design in organisations and it is significant in the learning process of unskilled and skilled employees in manufacturing industries particularly in Malaysia. It was also found that learning in teams (groups) for both unskilled and skilled employees appears to be a very significant factor in workplace learning. The previous studies also found that team learning has a positive influence on different aspects and levels such as individual-team-organisation. Team learning enhances the development of a team's vision and goal, improves skill knowledge of other team members and enhances the performance of the team (Boon et al., 2013; Veestraeten et al., 2014). Sweet and Michaelsen (2007) claimed

![Figure 1. The workplace learning model.](image)
that team learning has a positive influence on individual learning and Johnson and Johnson (1994) found that it is also enhances their self-efficacy and motivation in the workplace.

This finding also shows the significance of individual relations in the work environment with superiors and colleagues as ‘Relatedness’ that is described in the ERG theory and this is similar with social needs and the external part of the need for esteem in Maslow’s theory. An individual’s satisfaction depends on a sharing process (in a team) or empathy where he/she is expected to satisfy relatedness needs by expressing their opinions and feelings when working in a team.

7. Conclusions

This study suggests that new employees with limited skills, could be assigned to perform simple tasks rather than complex tasks. However, it was also discovered that unskilled employees preferred doing complex tasks rather than simple tasks. Tasks also should be part of group activities to give enough time for development of employee capabilities during the early period of employment. It was also found that skilled employees preferred doing complex tasks rather than simple tasks, and also preferred to work individually. This increased the employees' motivation and satisfaction. Thus, this leads to the achievement of desired outcomes for both employees and organisations as reported in many theories that suggest that increasing employee motivation will increase work satisfaction and result in higher performance (Herzberg, 1966; Judge, Thoresen, Bono, & Patton, 2001; Schofield, 1998).

Learning behaviours also can be an important factor in developing task design in the workplace as described by Taris (2006) who claimed that it can be the attainment of new knowledge and skills that are important in order to be functioning effectively in work settings. This study reported that unskilled employees learnt by doing simple tasks and skilled employees learnt by doing complex tasks. Therefore, this can be an important predictor as it may have a significant impact on successful workplace learning that may result in increased employee motivation and satisfaction. The final issue for employers and policy makers is that they are highly recommended to address team learning in the workplace as suggested in this study as both unskilled and skilled employees found that team learning influenced their work motivation and satisfaction. Therefore, it could be a significant contribution to the employers and policy makers to develop a team learning policy in their organisations. It is also suggested that employers and policy makers in organisations should make polices that are clear, objective and specific to improve work motivation and satisfaction of employees in the workplace.

The empirical findings generated in this study, particularly in job characteristics in manufacturing industries, are a significant and novel contribution to the development of task design and workplace learning. It has been found that, especially in Malaysia, researchers and practitioners have not concentrated on task characteristics design especially task identity and skill variety as well as the learning behaviours of employees. In summary, the key contributions of this study are:

- Knowledge and understanding of motivation and satisfaction theories for the use of organisations especially in developing countries like Malaysia.
- One of the few studies that relates motivation and satisfaction as well as learning behaviours in job design especially in manufacturing industries in Malaysia.
• Input to employers and policy makers.
• A recognition of the need for task design, especially task identity and skill variety.

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