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INNOVATION PRACTICES OF SMALL AND MEDIUM ENTREPRISES OWNED BY MYANMAR WOMEN

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CERTIFICATION

I hereby certify that content of this dissertation is wholly my own work unless otherwise referenced or acknowledged. Information from sources is referenced with original comments and ideas from the writer herself/himself.

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ABSTRACT

This study aims to present the innovation practices in small and medium sized enterprises (SMEs) owned by Myanmar women. The specific objectives are to investigate the types of innovation dominating in such enterprises, and to analyze the factors influencing innovation and relationship between innovation and performance. Size of enterprises is identified with number of employees. Sample size in this study is 80, and sample SMEs are randomly selected from 393 SMEs owned by Myanmar women in Yangon. To collect primary data from those selected SMEs, personal interview method is applied by using structured questionnaires. To test the hypotheses which are developed to achieve research objectives, stepwise regression analysis is conducted. From analysis, it is found that increase in sales revenue is resulted from new product innovation which is significantly improved processes and process innovation new. The profit of enterprises have positive effect on process innovation which is either at totally new level or at significantly improved level. Enterprises can also reduce cost per unit of output by improving their existing processes and process innovation which is new to the industry. Firm's age and availability of capital have positive effect on both product innovation and process innovation. Information source have positive effect on product innovation which is significantly improved on existing product in the market. Moreover, owners' creativity is necessary for all innovation by types and by newness levels. For new product innovation, owners' future orientation trait is also supportive; and to improve processes and products, owners have to be flexible to adapt to emerging processes and new attributes of products. This study also highlighted that improved product would not be attractive to customers for increasing sales as well as profit. Thus, women entrepreneurs should try to launch totally new products at the start-up stage of their firms by investing enough of capital, and then they should step up to the next stage. At the next stage, they should invest their retained earnings in innovating new processes in industry.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
CEval	Centre for Evaluation
Deval	Development of Evaluation
GET	General measure of Enterprising Tendency Test
KMO	Kaiser-Meyer-Olkin
NAWBO	National Association of Women Business Owners
NFWBO	National Foundation for Women Business Owners
PFQ	Psychological Flexibility Questionnaire
PII	Product Innovation Significantly Improved
PIN	Product Innovation New
PSII	Process Innovation Significantly Improved
PSIN	Process Innovation New
S&IRQ	Stimulating and Instrumental Risk Questionnaire
SMEs	Small and Medium Enterprises
TPP	Technological Product and Process
UMFCCI	Union of Myanmar Federation of Chambers of Commerce and Industry
UNDP	United Nations Development Business

Chapter (1)

Introduction

Women-run entrepreneurial ventures have generated value and fuelled innovation on community and global levels. In recent years, the increased presence of women-run entrepreneurial ventures had a remarkable impact on employment and on business environments (Murphy, Kickul, Barbosa & Titus, 2007). For example, such firms now comprise approximately 25-33 percent of all businesses in the formal business economy worldwide and are reasoned to play an even larger role in informal socioeconomic and market systems (NFWBO, 2001) [1] . Thus, the women's entrepreneurship deals with both the situation of women in society and the role of entrepreneurship in that same society.

Numerous collaborations showed that women-owned businesses were gradually becoming an important factor for the global economy (www.nfwbo.org, 2009). A women entrepreneur is a woman who has the inner-drive and self-initiative attitude to begin her own business (Starr & Yudkin, 1996). Female entrepreneur can be seen as the leader in any business and must take the first attempt to launch new business venture, manage day to day risks, handle financial, coordinate administrative, hold social responsibilities, and take charge of its day-to-day management (Moore & Buttner, 1997).

There are many causes of doing own businesses of women do own businesses. Mavin (2001) noted that career experiences of women are different from men. The difficulty in achieving career satisfaction and progression has led many women to

[1] The National Foundation for Women Business Owners (NFWBO) is a nonprofit research and leadership development foundation established by NAWBO. This organization helps women entrepreneurs and business owners to meet professional certification and training needs. The NAWBO began as a small group of Washington, D.C., businesswomen who started meeting in 1974. They began as a networking group, meeting to discuss mutual experiences, exchange information, and help develop business skills for group members. They incorporated as the NAWBO on December 19, 1974. Today, its headquarters are located at 8405 Greenboro Drive, Suite 800, McLean, VA, 22102; 800-556-2926. It also maintains an informative Web site at www.nawbo.org.

consider entrepreneurship as a viable career alternative to meet their personal and professional objectives (Kephart & Schumacher, 2005). Women leave the employed workforce to start businesses for a variety of reasons (Moult & Anderson, 2005). Lack of career progress, a sense of unfairness in the workplace or strain on their family or personal lives are among the reasons noted for the transition of women to become entrepreneurs (Mattis, 2004; Moult & Anderson, 2005). Women entrepreneurs also start businesses to fill a niche with products or services in the market, or to achieve a sense of self-fulfillment (Mattis, 2004). The reasons of women entrepreneurs of starting own businesses would not be the same in different countries. In Myanmar, the reasons may be largely related to income generation and strain on their family lives.

The contribution of women who owned small and medium enterprises (SMEs) would be crucial while the role of small and medium enterprises is significant for economic development of countries, especially in developing countries. In other words, the contribution of women entrepreneurs could not be ignored in developing economies. According to the definition of Collins, Hanges & Locke (2004) "an entrepreneur is someone who independently owns and actively manages a small business" women entrepreneur can be defined as a woman who independently owns and actively manages a small business. Thus, a nation's economy relies on SMEs development and the women entrepreneurs could be supportive to SMEs development of it.

Stefanović, Milosevic & Miletic (2009) stated that SMEs are usually representing the majority of all the enterprises and accordingly they are main driving force of entrepreneurship development and economy. In 2009, they also observed that SMEs stimulate initiative, invention, and overall entrepreneurial spirit. The specificities of SMEs enable them to be far more flexible than large enterprises, which is one of the basic conditions for adaptability to environmental changes. However, to be making a profit as long as it is profit organization, an SME needs to consider not only external effect but also internal factors. When both the internal and the external factors are taken into consideration, a business organization is able to generate profits. As an external consideration, SMEs need to know who the competitors are and other external environments that can affect them. Internal issues evolve around two basic concerns: what kind of products or services should the firm sell and how are they going to sell them to the markets. These internal issues stem from firm's innovation.

To survive in today's global market economy and achieve long-term success, firms have recognized the importance of being able to adapt and keep innovating to overcome intense competition and to match changing market demands (Ellonen, Jantunen & Kuivalainen, 2011). Even small and medium firms need to seek new strategies and business models, introduce new and better products and services, and consider new knowledge and technologies (Hadjmanolis, 1999). Innovation is considered to be of importance to the growth of firms, despite their size, with great leverage in creating economic values and competitive advantages and in driving changes (Epstein & Shelton, 2006).

The internationalization of business activities has created a dynamic and a highly competitive environment for small and medium enterprises, reflecting need for new approaches and orientations towards innovation and long-term investment (Brik, Rettab & Mellahi, 2011). Historically, SMEs have focused mainly on head-to-head market competition over buying and selling of existing products and services, which have decreased their presence and stickiness (not easily moveable) in the local market. Their survival objectives when market conditions are stable is to decrease costs and increase short-term profits, and when market conditions are dynamic and/or turbulent their survival strategy is to cautiously move into new domains including innovation (Hertog & Jong, 2010).

Innovation is not something that is limited to large firms, small and medium firms can also be more productive in terms of innovation (Carrier, 1994). Innovation has created many opportunities for firms to not only improve their current business operations and competitive advantages but also to engage in new ones and gain higher business growth performance (Forsman & Temel, 2011). At the present time, firms are increasingly relying on innovation to stand out from competitors, create value for customers, and increase their growth (Australian Chambers Business Congress, 2011).

Baumol (1993) pointed out that 'virtually all of the economic growth that has occurred since the eighteenth century is ultimately attributable to innovation'. Thus, innovation matters not only at the business level but also at the level of national economic growth. The innovation would foster growth, profits and success of businesses, then the nation's economy will be developed due to the contribution of successful businesses. Thus, the innovation is necessary for both the entrepreneurs' development and nation's development. The World Economic Forum publishes an

annual comparison of each country's innovativeness because it believes innovation fuels not just the prosperity of firms but of nations. Ivan and Icoviou (2009) stated that the competitive advantages of an economy of a nation are mainly generated by the capacity of the local businesses to sustain innovation.

Generally, innovation is to be defined as 'the successful implementation of a creation' (Heunks Roos, 1992). Innovation is also defined as the application of new ideas to create value for businesses (Bozkurt & Kalkan, 2014). The innovation concerns the search for, and the discovery, experimentation, development, imitation, and adoption of new products and new production processes (Dosi,1988). In recent years of rapid technological change, globalization and fierce competition in the markets, forced entrepreneurs to renew and to differentiate themselves more quickly Businesses which aim to achieve market success and to provide sustainable competitive advantage need to take advantage of new opportunities accompanying new products, services and/or market (Tajeddini, 2010).

One of the most significant figures in the area of innovation of economic theory was Joseph Schumpeter who wrote extensively on the subject of innovation. Schumpeter, (1934) argued that entrepreneurs will seek to use technological innovation – a new product/service or a new process for making it to get strategic advantage. Schumpeter linked the innovation with entrepreneurship. Schumpeter, (1965) defined “entrepreneurs as individuals who exploit market opportunity through technical and/or organizational innovation”. Zimmerer & Searborough (1994) also defined 'entrepreneur' as a person who creates a new business in the dimensions of uncertainty for gaining growth and monetary profits by recognizing opportunities and constructing the required resources. However, at the recent time for most people, the term 'entrepreneur' is defined as a person who owns and leads a business Filion, (1998).

As mentioned above, the country's economic development largely relies on the success of entrepreneurs. In the past, most of the entrepreneurs are men rather than women because the responsibility of income generation in normal families is typically taken by men. At present, globally, the number of double income families has been rising. The pre-assumption that the role of women can be seen only at housekeeping and child bearing has left behind. Women can do businesses, can take roles at top management level in businesses and also can get the top role in social activities.

Female owned businesses are becoming more important and prominent than before. (Verheul & Trunk, 2006) pointed that "Increasingly, female entrepreneurs are considered important for economic development." Globally, most of the women are self-employed, and was estimated that women are capable at owning and managing up to one third of all businesses in developed countries (McClelland, Swail, Bell & Ibbotson, 2005). McClelland et. al. (2005) has confirmed that female entrepreneurs' activities could contribute significantly to their communities and economies, in the developed and developing countries. Thus, the contribution of small and medium enterprises owned by women is significant to nation's economic development, especially in developing countries and in countries in which gender ratio is screwed to number of women.

As mentioned above, the innovation of small and medium enterprises, including businesses owned by women is crucial in economic development of countries. However, in Myanmar, there is a huge lack of documentation on women entrepreneurship. In DAFT report on women and the economy in Myanmar January 2016[2], the two reporters – Urbano and Dickinso mentioned that in a period of intensive assessment and consultation about Myanmar's economy generally, women's roles, rank, rights, and remuneration in the economy is currently one of the least documented aspects of their lives and this translates to a need for research.

This study focuses on innovation of Myanmar women business-owners. As a developing country, Myanmar economy is largely relying on SMEs development. SMEs development would be significantly supported by women SMEs owners. In this study, the relationship between economic performance and innovation of SMEs owned by Myanmar women examined. Moreover, the driving factors of innovation in their firms explored. The motivating factors of women to generate innovation in their own businesses and barriers to this innovation investigated.

[2] DAFT stands for Department of Foreign Affairs and Trade, Australia. The report on "Women and the Economy in Myanmar: An Assessment of DAFT's Private Sector Development Programs" was published in January 2016.

1.1 Rationale of the Study

In 2004, the second OECD[3] conference of Ministers responsible for SMEs highlighted the two main reasons to study the women entrepreneurship. The first reason is that women business-owners have been recognized during the last decade as an important untapped source of economic growth. Women who owned small and medium enterprises create new jobs for themselves and others and by being different also provide society with different solutions to management, organization and business problems as well as to the exploitation of entrepreneurial opportunities. While without a doubt the economic impact of women business-owners is substantial, many developing countries still lack a reliable picture, describing in detail that specific impact. The second reason is that the topic of women in entrepreneurship has been largely neglected both in society in general and in the social sciences (Holmquist & Sundin, 1990).

The two reasons mentioned above are also fitted with Myanmar's current transition in its economy. In DAFT's report on women and the economy in Myanmar (January 2016), the reporters mentioned the major change in Myanmar with regard to the role of women. The first finding is that there have been notable improvements in social and economic indicators for women, including a reduction in the maternal mortality ratio, improved female literacy rate and educational completion, increased labor participation rate (although exact figure is debated), and gradual increases in women's non-agricultural employment.

In this period of political and economic opening and optimism in Myanmar, discussion of 'economic opportunities' for women is welcomed and in keeping with the upbeat tone. In this era of historic change, there is a window of opportunity to forge Myanmar that affirms women business-owners and innovation of their small and medium firms. In DAFT's report, Urbano and Dickinso (2016) discussed the three opportunities for women in economy. They mentioned that, after November

[3] OECD is Organization for Economic Co-operation and Development. The second conference of Ministers responsible for SMEs was held in Istanbul, Turkey during 3-5 June 2004 with the main title of "Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards a More Responsible and Inclusive Globalization". From this conference, the report of "Women Entrepreneurship: Issues and Policies" is issued on the responsibility of the Secretary-General of the OECD. Views expressed are those of the authors and do not necessarily reflect those of the Organization or its member governments.

2015 election in Myanmar, the new term – inclusive growth – was emerged in meetings and it seemed to emphasize the role of women in business and on boards would be a direct way of tabling women's priorities for economic reform and backing. To miss this window of opportunity would perpetuate the invisibility of women's economic contributions and issues, and would frustrate efforts to ensure that policy and programs support inclusive growth.

The second opportunity is related to financing of women small-firm owners. The momentum on the secured transactions legislation would increase women's access to finance without need of fixed collateral or land title. The last opportunity is that some industries (e.g., tourism industry, food and beverages industry) have been developing in Myanmar, they can be seen as growth sectors for Myanmar. In these sectors, there is scope to improve women's participation through skills building and improved product knowledge. With low capital required for start-ups, these sectors are conducive to women establishing businesses.

Because of these opportunities as mentioned above, Myanmar women have been trying to contribute to economic development by establishing own businesses, and also participating in forums and talks about SMEs development and role of Myanmar women in economic reform of Myanmar. At first, they normally try to overcome their inherited problems to survive as employees. According to the tradition of Myanmar, the responsibilities of housekeeping and child-bearing are taken by women. Thus, sometimes they cannot show high commitment to their duties at work. They must try for balance between their responsibilities at home and at work. It is very hard for some women. Moreover, values and beliefs of Myanmar people has been changed on women, and women become aware on own income, and ways for work-life balance. Country itself also needs more contribution from private businesses, especially from SMEs owned by either men or women. The ratio of women to total population is also higher than the ratio of men.

As Myanmar reintegrates its economy into regional and global markets, it will rely heavily on the contributions of women. The country's rate of women's labor market participation is reportedly among the highest in the world — in a workforce of more than 35 million people, 75 percent of women aged over 15 are economically engaged, not far from the men's participation rate of 82 percent (USAID, 2016).In Myanmar, in 2015, the 20 percent of SMEs are owned by women. As Myanmar's

economy diversifies, women are becoming leading entrepreneurs in boutique tourism, food and beverages, handicrafts, and retail, and are also active in services including communications, education, design, and healthcare.

In Myanmar, the stereotype of the role of women is now significantly changed. In the past, Myanmar women's inherent duty in family is not for doing business, not to generate income, only to act as housewives. For working women in Myanmar, social barriers to promotion to top management level were women's family and personal obligation. Women's family and personal obligations are sometimes great barriers for succeeding in business career. Not only these social barriers but also the economic factor forced women to do their own businesses.

While the rate of establishing small and medium enterprises by women is high, innovation is at the crucial role not only for sustainable success but also for survival of SMEs owned by Myanmar women. SMEs are inherently weak in assessing finance due to lack of collateral. Thus, they may lack in spending marketing expenses. They must find other source to gain success and to gain competitive advantage over larger firms. In the highly competitive world, innovative ideas are what will separate such firms from the rest. In order to create an outstanding product, strong brand and to build customer network, SMEs need to innovate. Innovation doesn't always mean to create something new: innovators often take something that already exists, improve it, change it, make it better and make it the best for their customers.

Although the growth rate is increased, the women who are running small and medium enterprises may face the distinct barriers to be successful, as well as they may have distinct sources of success. Although it is not sure that which factors are driving the success of small and medium entreprises owned by Myanmar women, the only obvious point is that innovation favors women business-owners to gain success over their rivals because customers are more conscious on innovation in the market due to technological advances, changing life styles, and more communicable between countries. Thus, it is needed to do research on what factors of innovation (sources of innovation and types of innovation) support to success or performance of SMEs owned by Myanmar women.

There are various factors which prosper innovation in SMEs. In general, these factors can be grouped into two: personal factors and organizational factors. Personal

factors are the personal traits and education of business-owners, and organizational factors are firm's availability of capital, firm's market orientation, information sources, firm's age, and so on. For upgrading the contribution of SMEs owned by Myanmar women, the factors which influence on innovation should be explored. If the organization factors are influencing on innovation and innovation leads to high performance, it is needed to provide financial assessment and information assessment for women business-owners. If the influencing factors are personal factors, the business education and entrepreneurial attitude training should be provided to women business-owners, especially SMEs owners.

When Myanmar women try to establish own businesses, they concern not only financing but also capability to do new (innovation). They have beliefs that good idea will bring customer attraction and market share. In order to support women business-owners to release their creative potentials, innovative specialized support services will be needed. Myanmar women business-owners thought of entrepreneurial process may be the same for men. However, in practice, many problems faced by women which are of different dimensions and magnitudes would prevent them from realizing their full potential as entrepreneurs. Thus it is necessary to study type of innovation for stimulating, supporting and sustaining the development of women business-success, and such an innovation needs to be in congruence realities and especially take congruence of the problem the women entrepreneurs face in real business environment.

In this study, the types of innovation dominating in SMEs owned by Myanmar women are examined. Moreover, the factors influencing their innovation are also analyzed. Finally, the relationship between types of innovation and firm's performance of Myanmar women SMEs owners are investigated.

1.2 Problem Statement of the Study

There are various types of innovation practiced by Myanmar women SMEs owners. To attract customers with new things is now crucial for gaining success in Myanmar. According to Propris (2002), product innovation and process innovation are mutually dependent. However, to produce new product, it is not sure that new process will be basic change needed. In Myanmar, although some new products are

generated without changing or upgrading the process, some must be generated through upgrading or changing the production process.

In Myanmar, it is not sure that women business-owners are focusing on product innovation or process innovation. They would try to introduce new products (e.g., organic food products with acceptable shelf-life, new tourist attraction services, traditional handicrafts with modern designs, and so on). They seem try to attract customers with innovative products. However, there is no evidence that they are launching new products instead of utilizing innovative processes. They would also practice innovative processes (e.g., service delivering process for time saving and convenience for customers, manufacturing methods for energy saving, and so on). Moreover, there is no evidence to understand the sources of their success, whether from product innovation or process innovation.

Myanmar women business-owners either try to launch totally new products (e.g., organic mushed tamarind sachets for ready-made tamarind juice) or try to improve significantly the existing products (e.g., bags made with domestic raw materials). Similarly, Myanmar women business-owners may practice totally new processes to manufacture products or to deliver services or they may practice significantly improved processes which are already existed in industry. However, there is no research on which is more effective for commercialization.

The issue pops up in business world is the hidden point of success. Some believes that the idea of introducing totally new to customers will give them long term success while some argue that women who own businesses are hardly struggling due to their craziness of doing new. Some women owned businesses are gaining success because of their tactful modifications of existing ones. However, they must have the ability to modify creatively.

It is also found that some women owned businesses are coping with today's customers' expectation beyond usual. Thus, they are trying to launch totally new products or services. Although many researchers pointed that product innovation preceded by process innovation, today's women business-owners are trying to launch new products or services without investing huge capital in changing or upgrading processes.

Innovation can be influenced by many factors, generally personal factors and organizational factors. The factors will be varied with nations and with business environments. These factors will also be varied with types of innovation. Some women rely more on organizational capabilities, but some rely more on their personal abilities to do innovation. Thus, from which innovation sources, the economic effectiveness come out is a questionable point. Moreover, it is also difficult to see which factors are important for innovation.

Every innovation cannot generate market acceptance. Some innovations may fail in market while some generates success. General findings for all types of businesses cannot represent in case of SMEs owned by women. This study analyzed the types of innovation and influencing factors on these innovation, and the relationships between types of innovation and performance of SMEs owned by Myanmar women.

1.3 Research Questions

This study aims to give answers for the following questions:

1. What types of innovation is influencing of in SMEs owned by Myanmar women?
2. Which personal factors are influencing on product innovation of SMEs owned by Myanmar women?
3. Which organizational factors are influencing on product innovation of SMEs owned by Myanmar women?
4. Which personal factors are influencing on process innovation of SMEs owned by Myanmar women?
5. Which organizational factors are influencing on process innovation of SMEs owned by Myanmar women?
6. What would be the relationship between types of innovation and performance of SMEs owned by Myanmar women?

1.4 Objectives of the Study

The main aim of this study is to analyze the innovation practices of SMEs owned by Myanmar women. The specific objectives are:

1. To identify the types of innovation of SMEs owned by Myanmar women
2. To analyze the personal factors influencing product innovation of SMEs owned by Myanmar women
3. To analyze the organizational factors influencing product innovation of SMES owned by Myanmar women
4. To examine the effect of personal factors on process innovation of SMEs owned by Myanmar women
5. To investigate the effect of organizational factors on process innovation of SMEs owned by Myanmar women
6. To analyze the effect of innovation types on performance of SMEs owned by Myanmar Women

1.5 Hypotheses of the Study

In this study, the following hypotheses are identified to be tested:

In SMEs owned by Myanmar women, personal factors of creativity, future orientation and flexibility have positive effect on product innovation which is new to the market and product innovation which is significantly improved on existing product in the market.

Hypothesis 1(a): In SMEs owned by Myanmar women, personal factors of creativity and future orientation have positive effect on product innovation which is new to the market.

Hypothesis 1(b): In SMEs owned by Myanmar women personal factors of flexibility have positive effect on product innovation which is significantly improved on existing product in the market.

In SMEs owned by Myanmar women organizational factors of firm's age and availability of capital and information source have positive effect on product innovation which is new to the market and product innovation which is significantly improved on existing product in the market.

Hypothesis 2(a): In SMEs owned by Myanmar women, organizational factors of firm's age and availability of capital have positive effect on product innovation which is new to the market.

Hypothesis 2(b): In SMEs owned by Myanmar women organizational factors of firm's age and information source have positive effect on product innovation which is significantly improved on existing product in the market.

In SMEs owned by Myanmar women personal factors of owner's creativity and flexibility have positive effect on process innovation which is new to the industry and process innovation which is significantly improved on existing process in the industry.

Hypothesis 3(a): In SMEs owned by Myanmar women, personal factors of owner's creativity have positive effect on process innovation which is new to the industry.

Hypothesis 3(b): In SMEs owned by Myanmar women, personal factors of creativity and flexibility have positive effect on process innovation which is significantly improved on existing process in the industry.

In SMEs owned by Myanmar women organizational factors of firm's age and availability of capital have positive effect on process innovation which is new to the industry and process innovation which is significantly improved to the industry.

Hypothesis 4(a): In SMEs owned by Myanmar women organizational factors of firm's age and availability of capital have positive effect on process innovation which is new to the industry.

Hypothesis 4(b): In SMEs owned by Myanmar women organizational factors of firm's age and availability of capital have positive effect on process innovation which is significantly improved on existing process in the industry.

Hypothesis 5: Performance of SMEs measured by sales is affected by both product and process innovation.

Hypothesis 6: Performance of SMEs measured by profit is affected by both product and process innovation.

Performance of SMEs measured by observed effect (improvement effect and reduction effect) is affected by both product and process innovation.

Hypothesis 7(a): Performance of SMEs measured by improvement effect is affected by both product and process innovation.

Hypothesis 7 (b): Performance of SMEs measured by reduction effect is affected by both product and process innovation.

1.6 Scope and Limitations of the Study

In this study, the identification of SMEs is based on number of employees, and in line with the definition of 1990 Private Industrial Enterprise Law, 1991 Promotion of Cottage Industries Law, 2011 Amending the Promotion of Cottage Industries Law and 2015 Ministry of Industry, According to their identification, small sized manufacturing sectors with 50 employees, Services business sectors with employees up to 30 and medium are sized Manufacturing sectors with 51 up to 300 employees, Services businesses with employees 51 up to 100. This identification is consistent with the identifications of DEval (German Institute for Development Evaluation) survey[4], 2015 and also with World Bank Enterprise Survey[5], 2015. However, the identification of SMEs in this study would be varied from the identification of OECD – its identification is small (10-49) and medium-sized enterprises (50-249) (OECD, 2005).

In this study, the sampling frame is adopted from the published data provided by DEval (German Institute for Development Evaluation). The OECD-UNESCAP-UMFCCI Myanmar Business Survey 2014 and the World Bank Enterprise Survey 2014 were also identified it as the most meaningful and comprehensive current quantitative data sources. However, the SMEs survey of DEval – unlike any other existing Myanmar business survey – is the only one that is not based on any register, but uses an approach which promises to generate an unbiased view of SMEs in Myanmar.

[4] The survey on small and medium-sized enterprises in Myanmar forms part of the cooperation between the German Institute for Development Evaluation (DEval) and the Center for Evaluation (CEval).

[5] The WB Enterprise Survey is a firm-level survey of an economy's private sector. More information can be accessed under http://www.enterprisesurveys.org.

According to DEval survey, there are 1965 SMEs in Yangon Division, Myanmar. In Yangon, 20 percent of all SMEs are owned by Myanmar women. Thus 393 businesses are owned by women. In this study, by using the formula developed by Yamane (1973) with 90 percent level of precision, the sample size is 80. Thus, it may not be representative of Myanmar as a whole or even of Yangon city as a whole.

To develop hypotheses and to establish the questionnaire relating to research problem, qualitative research is conducted before the description of research problem. The in-depth personal interview method is applied by conducting interviews with 7 Myanmar women who owned SMEs and they are practicing new ways (innovation) to gain success. Then, to test the hypotheses, the quantitative research method (survey) is applied. To collect data from 80 randomly selected women SMEs owners, the structured questionnaire is developed. Personal interview method is used to collect the data from them.

For data analysis, the descriptive analysis is conducted, and Multiple-linear regression method is also applied. Before doing this analysis, factor analysis is made to test the validity of data.

1.7 Organization of the Study

This study includes five chapters. Chapter (1) is introduction chapter mentioning the rationale, problem statement, objectives, hypotheses, scope and Limitation of the study. Chapter (2) is theoretical background and literature reviews on previous research and observations on innovation. Chapter (3) is about the research methodology in detail. Chapter (4) is an analysis chapter presenting types of innovation of SMEs owned by Myanmar women, factors influencing these types of innovation, and the relationship between innovation and performance of SMEs owned by Myanmar women. Chapter (5) is about conclusion which consists of research findings, discussions, recommendations, and need for further research.

Chapter (2)

Theoretical Background

As theoretical framework, firstly the terms Myanmar women and SMEs are defined within the frame of this study. Then, the concepts of innovation and types of innovation, the variables which are stimulating and nurturing innovation and the relationship between innovation and business performance are explained theoretically. Next, the literature review on previous research papers is presented. Finally, the conceptual framework of this study is presented.

2.1 Working Definition of Myanmar Women Business-owners

According to business dictionary, business owner is an individual or entity who owns a business entity in an attempt to profit from the successful operations of the company. Generally, who has decision-making ability and first right to profit. Women-owned businesses, as defined by the U.S. Census, are businesses in which women own 51 percent or more of the equity, interest, or stock of the business.

In this study, women business-owners are women who legally own businesses, and who have decision-making authority and first right to profit of their businesses.

2.2 Defining of SMEs

Different countries defined SMEs differently. According to Work Bank Enterprise Survey, SMEs are defined by only one category (number of employees and it is shown in Table (2.1).

Table (2.1) SMEs Definition Used in World Bank Enterprise Survey

Category	Number of Employees
Micro enterprise	5-9
Small enterprise	10-49
Medium enterprise	50-99

Source: World Bank Enterprise Survey, 2015

The definition of SMEs developed by OECD in 2005 is also shown in Table (2.2).

Table (2.2) SMEs Definition of OECD

Category	Number of Employees
Micro enterprise	1-9
Small enterprise	10-49
Medium enterprise	50-249

Source: OECD, 2005

In Myanmar, SMEs are defined in Small and Medium Enterprises Development Law (2015) with these dimensions: number of employees, amount of capital and annual turnover as presented in Table (2.3).

Table (2.3) SMEs Definition in Myanmar

No.	Categories	No. of Employees	Capital (Kyats in Mil)	Turn-over (Kyats in Mil)
1	**Small Enterprises**			
	(a) Manufacturing Sector	Up to 50	Up to 500	
	(b)Labor intensive manufacturing	Up to 300	Up to 500	
	(c) Wholesale Business	Up to 30		Up to 100
	(d) Retail Businesses	Up to 30		Up to 50
	(e) Services Business	Up to 30		Up to 500
	(f) Enterprises other than above mentioned	Up to 30		Up to 50
2	**Medium Enterprises**			
	(a) Manufacturing Sector	From 51-up to 300	From 500-up to 1000	
	(b)Labor intensive manufacturing	From 301-up to600	From 500-up to 1000	
	(c) Wholesale Business	From 31-up to 60		From 100up-to 300
	(d) Retail Businesses	From 31-up to 60		From 50 up-to100
	(e) Services Business above mentioned	From 51-up to 100		From 100-up to 200

Source: Ministry of Industry, 2015

Based on the SMEs definition of Ministry of Industry in Myanmar (2015), this study applies only one criterion to define SMEs. This criterion is number of employees.

2.3 Concept of Innovation

The innovation can be studied with different aspects such as its conceptualization in various contexts, types of innovation, and innovation process.

2.3.1 Conceptualizing Innovation

Innovation has been studied in a variety of contexts in relation to technology, commerce, social systems, economic development, and policy construction. There are, therefore, naturally a wide range of approaches to conceptualizing innovation (Fagerberg et al 2004). However, recent scholars have been conceptualizing innovation in the three common contexts such as economics, technology, and business contexts.

(a) Conceptualizing Innovation in Economics Context

In Economics context, the word "economic innovation" has been introduced by Schumpeter (1934) and explained as capital accumulation that is for economic development. It was mentioned that the central figure in this process is creative entrepreneur. Economic innovation is the introduction of a new good or a new quality of good. Economic innovation can also be seen as the introduction of a new method of production or new way of handling a commodity commercially. From marketing point of view, it is the opening of a new market, whether or not this market has existed before. It is also the conquest of a new source of supply of raw materials or half-manufactured goods whether this source already exists or whether it has first to be created. From organizational point of view, it is the carrying out of the new organization of any industry like the creation of a monopoly position or the breaking up of a monopoly position (Schumpeter, 1934).

Schumpeter also proposed the five types of innovation: the product innovation, the process innovation, the marketing innovation, the supply chain innovation, and the business model innovation.

The product innovation is defined as new products or services introduced to meet an external user or market-need (Knight 1967; Utterback and Abernathy, 1975; Ettlie and Reza, 1992). Product innovation corresponds to the introduction on the market of a new or improved product (Propris, 2002). Product innovation involves the introduction of new goods or services that is new or substantially improved (Schumpeter, 1934).

Process innovation is defined as new elements introduced into an organization's production or service operations (e.g., input materials, task specifications, work and information flow mechanisms, and equipment) to produce a

product or render a service (Knight, 1967). Process innovation relates to the sequences and nature of the production process (Propris, 2002). Process innovation involves the implementation of a new or significantly improved production or delivery method (Schumpeter, 1934).

Marketing Innovation is the development of new marketing methods with improvement in product design or packaging, product promotion, or pricing. Supply chain occurs in the sourcing of input products from suppliers and the delivery of output to customers. Business Model Innovation involves changing the way business is done terms of capturing value (Miles, 2000).

(b) Conceptualizing Innovation in Technological Context

In the technological context, technological innovation is new technology or combination of technologies induced commercially to meet a user or a market need. In that context, the concept of technological product and process (TPP) innovations is considered. The TPP innovations comprise implemented technologically new products and processes, and significant technological improvements in products and processes (OECD, 1995).

The concept of radical innovation and incremental innovation is also added to the concept of TPP innovations in the context of technological innovation. Incremental innovation can be either product or process, it refers to improvements due to use or experience. It involves making minor changes over time to substain the growth of a company without making sweeping changes to product lines, services, or markets.

Incremental innovations occur more or less continually and have minimal economic impacts. Radical innovation involves launching an entirely novel product or service rather than providing improved products or services along the same lines as currently. Radical innovations are discontinuous events resulting in major technological change.

In 1994, Freeman added another two types of innovation into the technological context of innovation. Those are new technological systems and changes of techno-economic paradigm. New technological systems are constellations of innovations with major economic impacts and a major degree of technical change. Changes of techno-economic paradigm completely alter the whole society and appear in long waves.

Meyer and Grag (2005) defined the term innovation as economically successful introduction of a new technology or new combination of existing technologies in order to create a drastic change in the value/price relationship offered to the customer and/or user.

(c) Conceptualizing Innovation in Business Context

In business context, it is often difficult to define innovation precisely. The innovation concerns the search for, and the discovery, experimentation, development, imitation, and adoption of new products and new production processes (Dosi, 1988). In this context, the theorists considered the nature of innovation adoption and innovation generation processes. Innovations can either be generated or adopted by an organization/business.

In the business context, the types of organizational innovation and service innovation are also added to other innovations such as product, process, marketing, business model, supply chain, radical, and incremental. Organizational innovation involves the creation or alteration of business structures and practices. Service innovation refers to service product innovation which might be, compared to goods product innovation or process innovation, relatively less involving technological advance but more interactive and information-intensive (Miles, 2000), mainly due to the characteristics of services.

(d) General Concept of Innovation

Although there are naturally a wide range of approaches to conceptualizing innovation, a consistent theme can be identified that "innovation is typically understood as the introduction of something new and useful" (Heunks, 1998). This identification is common to all types of innovation such as product innovation, process innovation, marketing innovation, and so on. The most common types of innovation by general conceptualizing are product innovation and process innovation (Propris, 2002).

2.3.2 Types of Innovation

The different classifications on innovation can be seen in different contexts as mentioned above. That means the different researchers identified different types of innovation. The various types of innovation are summarized in Table (2.4).

Table (2.4) Types of Innovation in Various Contexts

Contexts	Economics	Technological	Business	General
Types of Innovation	Product Process Marketing Supply Chain Business Model	Product Process Incremental Radical New technological systems Techno-economic paradigm	Product Process Marketing Supply Chain Business Model Incremental Radical Organizational Service	Product Process

Source: Compiled for this Study

As shown in Table (2.4), the most common types of innovation are the product innovation and process innovation. Many prior studies of innovation have primarily focused on product innovation predominantly at the business organizational level because product innovation is widely recognized as essential to business success (Troy, Szymanski, & Varadarajan, 2001). However, Brentani (2001) argued that innovation involved the creation of a new product, service, or process. For this study, the definition of innovation will be interpreted broadly, encompassing new product or services development, and new processes of producing products or delivering service. In this study, the two types of innovation (product/service innovation and process innovation,) are examined to identify the innovation of Myanmar women entrepreneurs. In this study, the newness level of innovation is viewed with two aspects such as totally new or substantially improved. This approach is consistent with definitions of innovation described by many theorists (e.g., Knight, 1967).

2.3.3 Innovation and Invention

In 1997, Adeboye presented the innovation adoption and generation processes. The innovation generation process requires a number of factors such as a high level of technological capabilities, strong Research and Development, and a pool of multi-disciplinary skills whereas the innovation adoption process does not. Because of high demand for such resources in innovation generation, the innovation generation is not

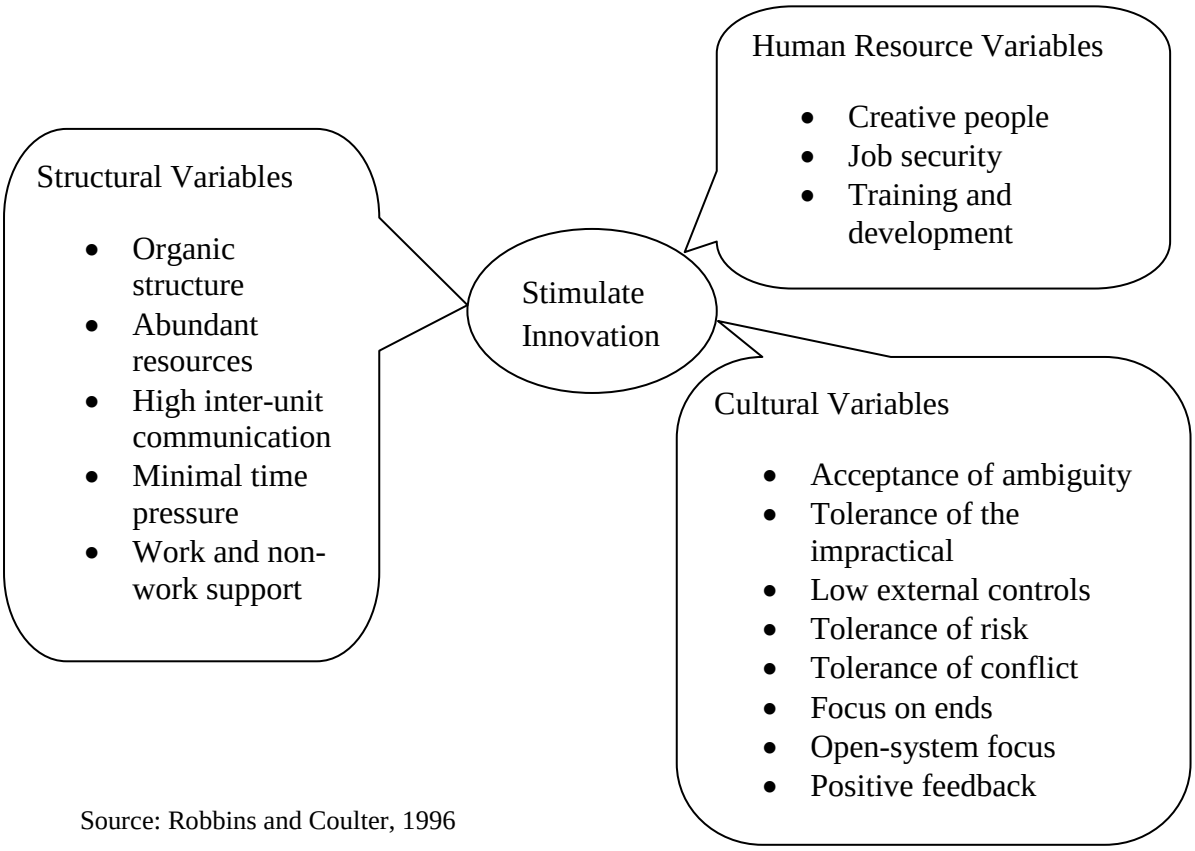
feasible for Small and Medium Enterprises in developing countries. A more appropriate choice in those countries is to adopt innovations that are already generated (Adeboye, 1997). By concerning with the innovation adoption concept, innovation is defined as the adoption of an idea or behaviour, pertaining to a product, service, system, or policy that is new to the adopting organization (Daft, 1982; Damanpour and Evan, 1984). Innovation is doing new things. Thus, innovation covers both adoption and generation. The invention is only covers the generation.

> *"An important distinction is normally made between invention and innovation. Invention is the first occurrence of an idea for a new product or process while innovation is the first attempt to carry it out into practice."*(Fagerberg, 2004: 4)

2.4 Factors Influencing Innovation

From theory, the variables stimulating innovation can be grouped into three such as structural variables, human resource variables, and cultural variables. These three groups are shown in Figure (2.1).

Figure (2.1) Variables Stimulating Innovation



Source: Robbins and Coulter, 1996

Structural Variables

Research into the effect of structural variables on innovation shows five things (Robbins and Coulter, 1996). First, organic structures positively influence innovation. Because this type of organization is low in formalization, centralization, and work specialization, organic structures facilitate the flexibility, adaptability, and cross-fertilization necessary in innovation. Second, the easy availability of plentiful resources provides the key building block for innovation. With an abundance of resources, managers can afford to purchase innovations, can afford the cost of instituting innovations, and can absorb failures. Third, frequent inter-unit communication helps break down barriers to innovation. Cross-functional teams, task forces, and other such organizational designs facilitate interaction across departmental lines and are widely used in innovative organizations. Fourth, innovative organizations try to minimize extreme time pressures on creative activities. Although time pressures may spur people to work harder and may make them feel more creative, studies show that it actually causes them to be less creative. Finally, studies have shown that when an organization's structure provided explicit support for creativity from work and non-work sources, encouragement, open communication, readiness to listen, and useful feedback, an employee's creative performance was enhanced.

Innovation is a characteristic of an organization, its members and its context. Essential innovation, distinguishing it from creativity, is the successful implementation of a creation. This is often a matter of resources. There are specific institutional factors which are fostering innovation within the organization. Institutional factors fostering innovation are the availability of external information, capital, cooperation, and qualified personnel (Oldenboom and Kleinknecht, 1994). Another structural factor is firm's flexibility and control. Innovative firms should balance between flexibility and control, whereas more positional (less innovative) companies are less interested in divergence and flexibility and prefer convergence and control by formal planning (Fairtlough, 1994).

The specific organizational capabilities stimulating innovation can also be identified in other way. Creative leadership is the kind of leadership that encourages, stimulates and guides the process of innovation from beginning to end. The challenge is in leading creative people to reach their full potential. Managers must provide an

organizational environment in which innovation can thrive, and use a variety of techniques to stimulate ideas for products, services and systems, and to generate ideas for bringing these to fruition. Organizations can get ideas from the sources such as research and development; cooperation with customers, suppliers, and competitors. To transform the creative ideas into economic reality, i.e., innovation, the organization need to has the strengths of availability of capital and education personnel (Adair, 2006).

Cultural Variables

Innovative organizations tend to have cultures which encourage experimentation, reward both successes and failures, and celebrate mistakes. An innovative culture is likely to have the following characteristics.

1. Acceptance of ambiguity: too much emphasis on objectivity and specificity constrains creativity.
2. Tolerance of the impractical: individuals who offer impractical, even foolish, answers to what-if questions are not stifled. What at first seems impractical might lead to innovative solutions.
3. Low external controls: rules, regulations, policies, and similar organizational controls are kept to a minimum.
4. Tolerance of risk: employees are encouraged to experiment without fear of consequences should they fail. Mistakes are treated as learning opportunities.
5. Tolerance of conflict: diversity of opinions is encouraged. Harmony and agreement between individuals or units are not assumed to be evidence of high performance.
6. Focus on ends rather than means: goals are made clear, and individuals are encouraged to consider alternative routes toward meeting the goals. Focusing on ends suggests that there might be several right answers to any given problem.
7. Open-system focus: managers closely monitor the environment and respond to changes as they occur.

8. Positive feedback: managers provide positive feedback, encouragement, and support so employees feel that their creative ideas will receive attention.

Human Resource Variables

The innovative organization actively promote the training and development of their members so their knowledge remains current; offer their employees high job security to reduce the fear of getting fired for making mistakes; and encourage individuals to become "champions" of change. Idea champions actively and enthusiastically support new ideas, build support, overcome resistance, and ensure that innovations are implemented. Research of Robbins and Coulter, 1996, found that the idea champions have common personality characteristics: extremely high self-confidence, persistence, energy, and a tendency toward risk-taking. Champions also display characteristics associated with dynamic leadership. They inspire and energize others with their vision of the potential of an innovation and through their strong personal conviction in their mission. They are also good at gaining the commitment of others to support their mission. In addition, champions have jobs that provide considerable decision making discretion. This autonomy helps them introduce and implement innovations in organizations.

2.5 Review on Empirical Studies

The previous researchers explored the factors influencing innovation and the relationship between innovation and performance of entrepreneurs. Then they grouped these factors into two: organizational factors and personal factors. Their organizational factors are equivalent to the structural variables of (Robbins and Coulter, 1996). Their personal factors are resulted from combining the cultural and human resource variables of (Robbins and Coulter, 1996) as shown in Figure (2.1).

2.5.1 Organizational Factors

Heunks (1998) proved that innovation depends on the availability of capital, information, cooperation, and qualified personnel. Other some researchers also identified that the institutional factors fostering innovation are the availability of capital, educated personnel, and cooperation (Hyvarinen, 1990, Heunks, 1998).

Heunks (1998) also tested that the influence of age of firm on innovation. However, it is found that the degree of innovation and the success from innovation is not related to the age of firm.

As an institutional factor influencing innovation, some researchers considered the employee innovative behavior. Nadin Dörner (2012) stated that first psychological works on innovation coined the term “innovative behavior”. It can be defined as the intentional generation, promotion and realization of new ideas within a work role, workgroup or organization in order to benefit role performance, the group or the organization (West and Farr 1990). Although closely related to employee creativity, innovative behavior implies more than being creative. Indeed, (Miron, 2004) have found that creative people are not always highly innovative. Innovative behavior is intended to generate some kind of benefit and has a clearer applied component (de Jong and den Hartog 2010). Consequently, researchers have agreed that innovative behavior encompasses creativity, i.e., the generation of new and useful ideas concerning products, services, processes and procedures and the implementation of the created ideas (Axtell, Holman, Unsworth, Wall & Waterson, 2000).

Scott and Bruce (1994) presented that the innovative behavior consists of a set of behaviors: idea generation (*creating new ideas for improvements*, *searching out new working methods, techniques, or instruments*, and *generating original solutions to problems*); idea promotion (*mobilizing support for innovative ideas*, *acquiring approval for innovative ideas*, and *making important organizational members enthusiastic for innovative ideas*); and idea realization (*transforming innovative ideas into useful applications*, *introducing innovative ideas into the work environment in a systemic way*, and *evaluating the utility of innovate ideas*).

Innovative behavior consists of a set of behaviors (Scott and Bruce 1994; de Jong and den Hartog 2010, Janssen 2000): opportunity exploration (*pay attention to issues that are not part of their daily work, wondering how things can be improved, searching out new working methods, techniques or instruments)* and idea generation (*generating original solutions for problems, finding new approaches to execute tasks*) generally include looking for and recognizing opportunities to innovate and producing ideas and solutions for the opportunities. Next, championing *(making important organizational members enthusiastic for innovative ideas, attempting to convince people to support an innovative idea)* refers to promoting the generated idea for the

purpose of finding support and coalition building. Finally, application *(systematically introducing innovative ideas into work practices, contributing to the implementation of new ideas, putting effort into the development of new things)* makes the supported idea really happen. It includes developing, testing, modifying, and commercializing the idea.

Innovative behavior can range from *incremental improvements* to developing *radically novel ideas* that affect processes or products across the whole organization (Axtell et al. 2000). While the latter are rather rare and mostly only employees working in the research and development domain are able to contribute in such a manner, the former smaller-scale suggestions and improvements are much more common and concern employees from all areas. Examples of innovative behavior include thinking in alternative ways, searching for improvements, figuring out new ways to accomplish tasks, looking for new technologies, applying new work methods, and investigating and securing resources to make new ideas happen (Nadin Dörner 2012). Innovative behavior is identified as extra-role behavior, which refers to discretionary behavior that is not specified in the job description (Katz and Kahn 1978) but nevertheless attempts to benefit the organization (Organ, Podsakoff, and MacKenzie 2006).

Sharma and Chrisman (1999) commented that innovative behavior is crucial in corporate entrepreneurship from which it can influence the innovation of corporation. Driven by the assumption that innovative work behavior contributes to work outcomes, most of the extant research on innovative behavior has focused on identifying its potential antecedents.

Yun-Jung Choi (2002) also presented that the two organizational factors such as market orientation and business planning are influencing the innovation. This finding is the result from survey conducted in U.S small business firms in small towns. This finding is also accounted for this study. Recently, Hurley and Hult (1998) made recommendations for incorporating constructs related to innovation into research on market orientation. In an empirical study of market orientation, innovation, and organizational learning in a large agency of the U.S federal government, Hurley and Hult (1998) found that learning and market orientation were antecedents to innovativeness.

According to Hurley and Hult (1998), market-oriented organizations provided a source of new ideas for change and improvement and motivation to respond to the environment. Kohli and Jaworski (1990) viewed market orientation as a continuous innovative behavior because a market orientation involved innovative strategies and activities in response to changes in customer needs. Since market orientation emphasizes a customer focus, market oriented firms tend to implement greater innovation in products and services offering the benefits to their customers. Market-oriented activities and behavior appear to influence the innovative activities in small business firms. Many studies provided evidence regarding the effect of market orientation on innovation in various business firms including manufacturing and services firms (Atuhence-Gima, 1996; Harryson, 1997; Lukas & Ferrell, 2000). Yun-Jung Choi (2002) also proved that the influence of market orientation on innovation.

Several studies provide a useful framework for examining various aspects of market orientation in business organizations. Specifically, the works of Kohli and Jaworski (1990), Narver and Slater (1990), and Pelham and Wilson (1996) help in the theoretical understanding of the market orientation. Each study puts emphases on different aspects of the market orientation, however, the fundamental dimensions of each study are conceptually associated with one another.

Narver and Slater (1990) defined market orientation as:

> "*the organization culture that most effectively and efficiently creates the necessary behaviors for the creation of superior value for buyers (customers) and, thus, continuous superior performance for the business*" (p. 21).

Narver and Slater (1990) and Yun-Jung Choi (2002) examined the behavioral characteristics of the market oriented business and suggested two behavioral components for market oriented organizations - customer orientation and competitor orientation.

First, Narver and Slater (1990) argued that customer orientation was one important component of market orientation. Customer orientation refers to the better understanding of target customers, which in turn, brings superior value for the customers. Customer-oriented business organizations devise plans to collect and interpret information about the customers Competitor orientation was the second component of market orientation referring to the learning and monitoring the current

and even potential competitors' strengths and weaknesses and capabilities and strategies (Narver & Slater, 1990). Narver and Slater (1990) insisted that to satisfy the target customers' current and expected needs and wants, market-oriented organizations needed to know and analyze the major current and potential competitors.

Yun-Jung Choi (2002) also explored the impact of organization's business planning on innovation. If the business has the practices of writing long-term plans, studying economic conditions in market area, determining growth rate of business, estimating cash flow, preparing monthly budget, reviewing customer satisfaction, keeping track of inventory and so on will make impact on innovation.

Some researchers stated that firm's age or stages at life cycle will influence on innovation. Yun-Jung Choi (2002) stated that businesses can go through different stages, beginning with the initial Start-up through Growth & Development to eventual Decline, and the stage will impact on innovation. Heunks (1998) also tested the hypothesis "younger firms are less innovative than the older ones". Swayne and Tucker (1979) also presented that for the firm's founder (entrepreneur) at the beginning (the birth or start-up stage) innovation consists mainly of the firm itself as a new product-market combination, and in the later stages entrepreneur gradually becomes with management responsibilities.

Some researchers observed the impact of firm's size on innovation. Heunks (1998) stated that innovation in small firm profits from their flexibility and creativity, and larger firms more from the availability of resources like external capital and qualified personnel. Dodgson and Rothwell (1994) also presented that whereas large firms have material advantages, small firms have behavioral advantages, which is expressed in a relationship between size and innovation and also in the phenomenon that small and large firms often cooperate.

By reviewing the previous research findings mentioned above, in this study, the following variables are identified as the organizational factors would influence on innovation of Myanmar women entrepreneurs:

(1) the availability of capital
(2) educated personnel
(3) cooperation with stakeholders

(4) employee innovative behavior

(5) market orientation

(6) business planning

(7) business stages

(8) firm's age

In this study, the information variable is not included in analysis on factors influencing innovation. Information for entrepreneurs is in constant nature because all entrepreneurs have equal chance to gain the information from business environment.

2.5.2 Personal Factors

Innovation typically involves creativity, but is not identical to it: innovation involves acting on the creative ideas to make some specific and tangible difference in the domain in which the innovation occurs. For example, Amabile, Conti, Coon, Lazenby & Herron (1996) propose:

> *"All innovation begins with creative ideas … We define innovation as the successful implementation of creative ideas within an organization. In this view, creativity by individuals and teams is a starting point for innovation; the first is necessary but not sufficient condition for the second". (p. 1154-1155).*

From this point of view, creativity may be displayed by individuals, but innovation occurs in the organizational context only. For innovation to occur, something more than the generation of a creative idea or insight is required: the insight must be put into action to make a genuine difference, resulting in new or altered business processes within the organization, or changes in the products and services provided (Davila, Epstein & Shelton, 2006).

Some researchers also presented the personal factors influencing innovation in businesses. Heunks (1998) proved that the personal backgrounds of innovation of entrepreneurs of 16 developing countries. According to Heunks, personal backgrounds of innovation are entrepreneur's high level of education, extroversion, and acceptance of challenges, a need for independence, self-confidence, risk-taking, flexibility, future orientation, and leadership affinities.

The relationship between problem solving style and innovation is well established in the private sector literature (Jabri, 1991; Scott & Bruce, 1994, 1998b).

Entrepreneurs with creative problem solving styles are more likely to ignore established frameworks, reframe the problem itself, and therefore to generate more frame-breaking outcomes in their problem-solving efforts (Cummings & Oldhan, 1997a). Thus, the personal factors influencing innovation also include the problem solving style of entrepreneurs. In this study, the personal backgrounds of innovative behavior are identified as follows:

(1) creativity
(2) entrepreneur's education background
(3) extroversion
(4) acceptance of challenges
(5) a need for independence
(6) self-confidence
(7) risk-taking
(8) flexibility
(9) future orientation
(10) problem solving style
(11) leadership affinities

(1) Creativity

In a Schumpeterian tradition, the arguments for distinction between invention and innovation occurred. At that time, some argued that invention and innovation are closely linked to the extent that it is hard to distinguish one from another. However, in 1998, Robert made a clear distinction between invention and innovation. Invention is the generation of an idea while innovation incorporates both invention and exploitation. Invention is the first occurrence of an idea for a new product or process, while innovation is the first attempt to carry it out into practice. In 2004, Fagerberg pointed out that innovation occurs when someone uses an invention. That concept of invention is the basis for the concept of creativity because many researchers also presented that the creativity is the conception of the idea.

Creativity is the ability to develop new ideas and to discover new ways of looking at problems and opportunities to enhance or to enrich people’s lives (Zimmerer and Scarborough, 1994). Recent scholars used the term creativity instead

of invention in the consideration of relationship with innovation. Thomas and Norman defined creativity is thinking new things, and innovation is doing new things. Amabile (1996) also proposed that “all innovations begin with creative ideas.” Innovation is the successful implementation of creative ideas within an organization. Creativity is the generation of novel ideas that may meet perceived needs or respond to opportunities for the organization. Creativity is the essential first step in innovation, which is vital to long-term organizational success (Daft, 2003).

In 1998, Heunks presented that creativity is divergent thinking to conceive new ideas, whereas innovation is the successful technical or economic implementation of a creation. From this point of view, creativity may be displayed by individuals, but innovation occurs in the organizational context only. Thus creativity by individuals and teams is a strong point for innovation; the first is necessary but not sufficient condition for the second. In other words, creativity is only the conception of an idea; innovation is recognizing the opportunity in an idea and translating it into an economic reality. However, in 2003, Daft argued that creativity can also be designed into organizations.

As mentioned above, in this study, creativity ability of entrepreneurs is identified as one of the factors influencing innovation.

(2) Education Background

The manufacturer with education related with business management and/or related with field of study of current business is counted as a personal background of innovative behavior.

(3) Extroversion

Extroverts prefer to get on with plan, rather to make plan; they tend to move first in making new friends and their general temperament is outgoing; they tend to act first and think later; they have lots of friends and acquaintances (Thoday, 2002).

(4) Acceptance of Challenges

The term "tolerance of uncertainty" can be used instead of the term "acceptance of challenges". Entrepreneurs would be more innovative if they tolerate

the uncertainty or they do not avoid challenges. If women entrepreneurs can accept the challenges, uncertainty cannot stop them from having the novel idea and transferring idea into economic reality. They do not perceive that being uncertain means that a person is disorganized and they also do not perceive that it is unfair not having any guarantees in life. They never can't relaxed if they do not know what will happen. Uncertainty never makes them uneasy, anxious, or stressed. Unforeseen events never upset them greatly. It does not frustrate them not having all the information they need. All these personalities inherently push entrepreneurs to generate innovation in current turbulent business world.

(5) Need for Independence

According to Davidsson (1995), the need for autonomy is present with person who prefers to set up their own objectives in the first time, to develop the action plans and to check themselves the realization of their objectives in the second time. These persons try to avoid the limitations, the roles established in organizations, and then they choose an independent activity. The persons who have a high degree of autonomy would of course feel at ease in an entrepreneurial activity. This desire was generally found with the entrepreneurs' who spent several years in the service of a society. Entrepreneur feels then the need to create her own organization, to make her own experiences. Working according to rules which she fixed herself, she installs her own workspace, she establishes a work atmosphere which suits her most, and which corresponds most to its culture. For the reason of having many years of experience, she feels a desire of independence and auto control (Janssen, 2006).

The common result from various surveys on reasons of choosing self-employed jobs is need for independence. This force is not only to doing own business but also to idea generation and innovation. Control decrease divergent thinking, thus a person will not be innovative if he or she has to work under control. Flexibility and autonomy are needed for brain storming, idea generation, and changing idea into innovation.

(6) Self-Confidence

Koh (1996) focused on the self-confidence as an important entrepreneurial characteristic. While Rubino and Freshman (2005) declared that the confidence is one

of the eight entrepreneurial competencies exist in his study. Moreover Othman et al. (2006:59-61) explained the main psychological characteristics of entrepreneurial personality including mainly self-confidence. Bondima et al. (2013) stated one of the characteristics and demographic factors influencing entrepreneurial inclination is self-confidence. The researcher believe self-confidence defines as entrepreneur believing about himself, and to which level he believes that she can lead her organization towards success. Self-confidence also support to innovation of entrepreneurs. To be innovative, entrepreneur must believe herself and also believe that she can lead others to reach success.

(7) Risk-Taking

The risk-taking is one of the personal factors stimulating creativity or innovative behavior (Robbins and Coulter, 1996). Heunks (1998) also supported to that fact. The entrepreneur who practice calculated risk-taking got aware of other's perception as risk-taker, they are not hesitate to put own money into a new business that could fail but the possible reward is high, they enjoy risk-taking and perceived that is what business is all about, and see risk-taking as an integral part of a challenging career.

(8) Flexibility

The essential element of innovative behavior remains divergent thinking which requires flexibility. Research findings indicate that divergent thinking supposes tolerance for ambiguity and lack of rigidity (Nystrom, 1979). Heunks (1998) also considered that proposition. Flexible persons got recognition from others as flexible person, they not very insisting in argument, they are willing to change own position even on important issues when face with good argument.

(9) Future Orientation

Some people are able to foresee the future implications of their present behavior. They understand how their present task-engagement is meaningfully related to desired future goals and how their present behavior serves the attainment of those future goals. Other people would rather live in the present; they do not anticipate as strongly the future consequences of their present activities. The degree, to which

people are able to look into the future, and thus foresee the usefulness of their present behavior, differs from one person to another (Simons, Vansteenkiste, Lens & Lacante, 2004). Seginer and Halabi-Kheir (1998) noted future orientation consists of the images individuals hold concerning their future as these images are reflected in hopes and fears. Future orientation provides the grounds for setting goals, planning, exploring options and making commitments that guide the person's behavior and developmental course (Bandura, 2001). If an entrepreneur has future orientation, he or she can set strategies which are appropriate to adapt to the changes of business environment. In implementing strategies, during recent time of more demanding, innovation will be necessary. Thus future orientation generates innovation.

(10) Problem Solving Style

The systematic or logical problem solver is likely to generate conventional solutions to problems. For the purposes of this study, this problem solving style is referred to as conventional problem solving style. The conventional problem solving style is contrasted with bisociate thinking which occurs when two matrices of thought are combined resulting in a non-habitual creative thought or act, looking beyond current rules and rational logic, relying more heavily on intuition and imagery. In contrast, the intuitive problem solver is more likely to generate novel problem solutions because they have a greater propensity to process information from different paradigms and combine it in novel ways (Garfield et al., 2001; Scott et al., 1994). For the purposes of this study, this problem solving style is referred to as creative problem solving style.

(11) Leadership Affinities

A successful chief executive will have a team of executives and administrators who can think strategically and build the corporate culture towards greater teamwork. They will have the knowledge and ability to get results from the individuals who make up the workforce. This is known as action-centered leadership and is a means of realizing a company's potential. This is the recognition of the need to lead rather than merely manage. Some of the best organizations are led by a team rather than an individual but the team itself needs a leader. This is the core responsibility of the chief executive.

All organizations that aspire to innovate need both leadership and management to achieve productive order without sacrificing freedom and creativity. Chief executives should give their organizations a sense of direction and a clear vision of the future. They should also be able to guide their organizations towards that clear vision.

The innovative leaders will follow the following process to guide individuals and teams (Thomas, 2006).

(1) Defining the task: clearly explains what needs to be accomplished or what area needs to be considered.

(2) Planning: the organization of resources – people, materials and time

(3) Briefing: makes sure all participants know their role and importance

(4) Controlling: keeps people on track without being too restrictive

(5) Evaluating: makes insightful judgments and appropriate criticism as necessary

(6) Motivating: keeps interest in and commitment to the task

(7) Organizing: keeps structure within the project team

(8) Setting an example: practices the behaviors needed to be seen in others

(9) Supporting: builds and maintains a team spirit and is accessible at all times.

The innovative leaders also consider the communicating about innovation. The leader will communicate effectively about progress, giving the team regular feedback as well as listening to their thoughts and ideas. Progress is a great motivator. The leader should make regular opportunities to talk and listen to the team about progress and changes that are being made along the way. The leader should explain why certain ideas have been implemented or chosen for further investigation and why others have been rejected at that time. The leader also should give recognition to those ideas that are developed and provide rewards to the people who generated them.

2.5.3 Innovation and Performance

In 1998, the relationships between creativity, innovation, and performance were presented by Felix J. Heunks. Heunks conducted the research on creativity, innovation, and success of entrepreneurs from sixteen countries. According to the

conceptual model of Heunks, there are positive relationships between innovation and success of entrepreneurs. Nadin Dörner (2012) also proved that the innovation will lead to performance via innovative behavior. Rotundo and Sackett (2002) also pointed out the relationship between innovation resulted from innovative behavior will lead to performance:

> *Job performance refers to actions and behaviors that are under the control of the individual and contribute to the goals of the organization (Rotundo and Sackett 2002: pp 121).*

To analyze the relationship between innovation and performance, in this study, the three measures of performance are used: increase in number of items of products/services, production volume/sales volume, and size of firm by number of employees during the last three years (2006-2009). The time horizon to measure innovation and performance of SMEs in developing countries should be at least three years (Mahemba and Bruijn, 2003).

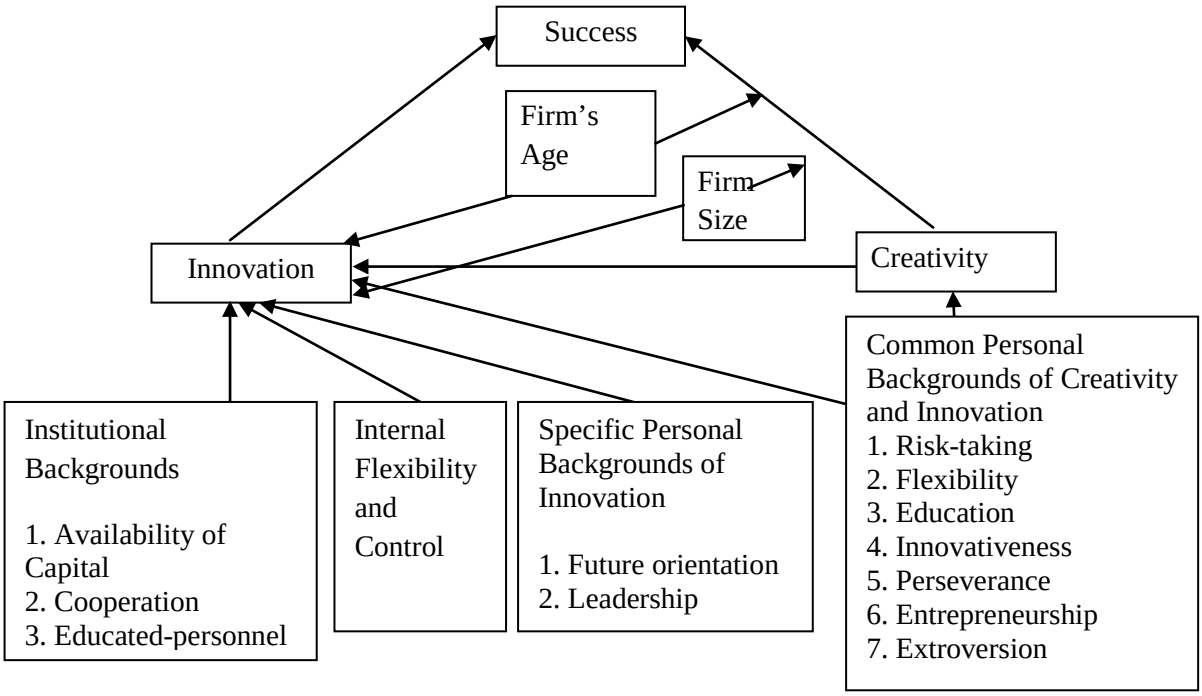
2.5.4 Conceptual Models of Previous Studies

The analytical model of this study stems from the two conceptual models of previous researchers who developed these conceptual models based on theories of innovation and social cognitive theory. The first conceptual model is developed by Heunks, (1998).

The variables fostering creativity and innovation of entrepreneur can be grouped into three: personal backgrounds, institutional backgrounds and firm's flexibility and control. That classification is relatively more relevant for entrepreneurs of small and medium enterprises (SMEs) in developing countries Heunks, (1998).

In 1998, the model showing backgrounds of creativity and innovation is presented by Heunks focusing on the success of entrepreneurs, in developing countries, through creativity and innovation. That model is depicted with Figure (2.2).

Figure (2.2) Innovation, Creativity and Success



Source: Felix J. Heunks, 1998

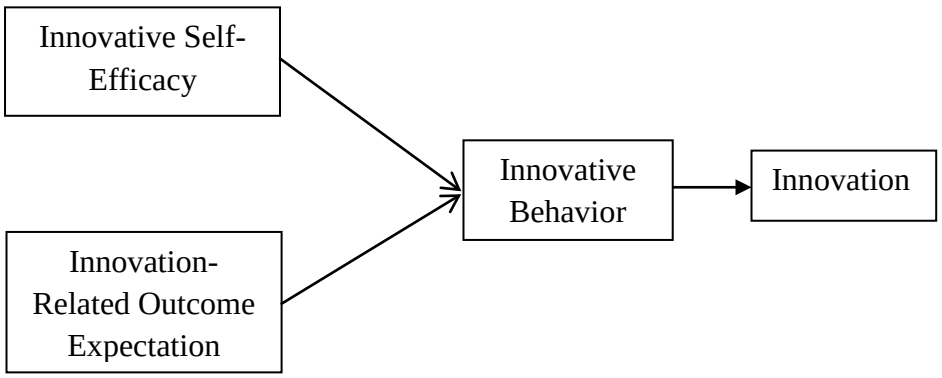
Creativity and innovation tend to share some personal backgrounds, and innovation has some specific personal backgrounds. Moreover, innovation depends on some institutional backgrounds. The research findings show that the common personal backgrounds of creativity and innovation are risk-taking, flexibility, education background, innovativeness, perseverance, entrepreneurial competencies, and extroversion.

The specific personal backgrounds of innovation are future orientation and leadership affinities. The institutional backgrounds of innovation are availability of capital, information, cooperation, and educated personnel. The common nature of SMEs is internal flexibility. Thus, the variable of firm's flexibility and control is less significant to explore the backgrounds of creativity and innovation of SMEs (Heunks, 1998).

Heunks, 1998 also presented that the success (performance) of entrepreneurs depends on their creativity and innovation. This concept is also adopted in this study. However, in this study, assumption is that only innovation can generate the performance, innovative behavior of entrepreneur alone cannot generate economic reality (performance).

The second conceptual model adopted in this study is the model of Nadin Dörner (2012). In 2012, Nadin Dörner pointed out that the employee innovative work behavior influences the innovation, and the innovative self-efficacy and innovation-related outcome expectation will influence on innovative behavior. The conceptual model of Nadin Dörner (2012) is adopted to identify one more personal factor influencing innovation. The conceptual model of Nadin Dörner (2012) is depicted as shown in Figure (2.3).

Figure (2.3) Employee Innovative Work Behavior and Innovation



Source: Nadin Dörner 2012 and West and Farr 1990

Nadin Dörner (2012) defines innovative self-efficacy as a person's belief in their capabilities to produce innovative outcomes. Innovative outcomes refer to performing innovation either product or process. Innovative self-efficacy is supposed to determine innovative work behavior. More specifically, it is supposed to influence people's initial decision to engage in innovative work behavior, their degree of persistence and effort expenditure when they face difficulties in the course of action, and the effective use of the competencies they possess regarding innovative work behavior. Since innovative self-efficacy is innovation-specific, it differs from general self-efficacy, which reflects a generalized competence belief in a wide variety of situations (Chen, Gully, and Eden, 2004).

Innovation-related outcome expectations refer to the beliefs of the consequences of innovative work behavior. As with self-efficacy, outcome expectations are seen as proximal antecedents to behavior (Yuan & Woodman, 2010). Yuan and Woodman (2010) suggest that two different forms of consequence beliefs

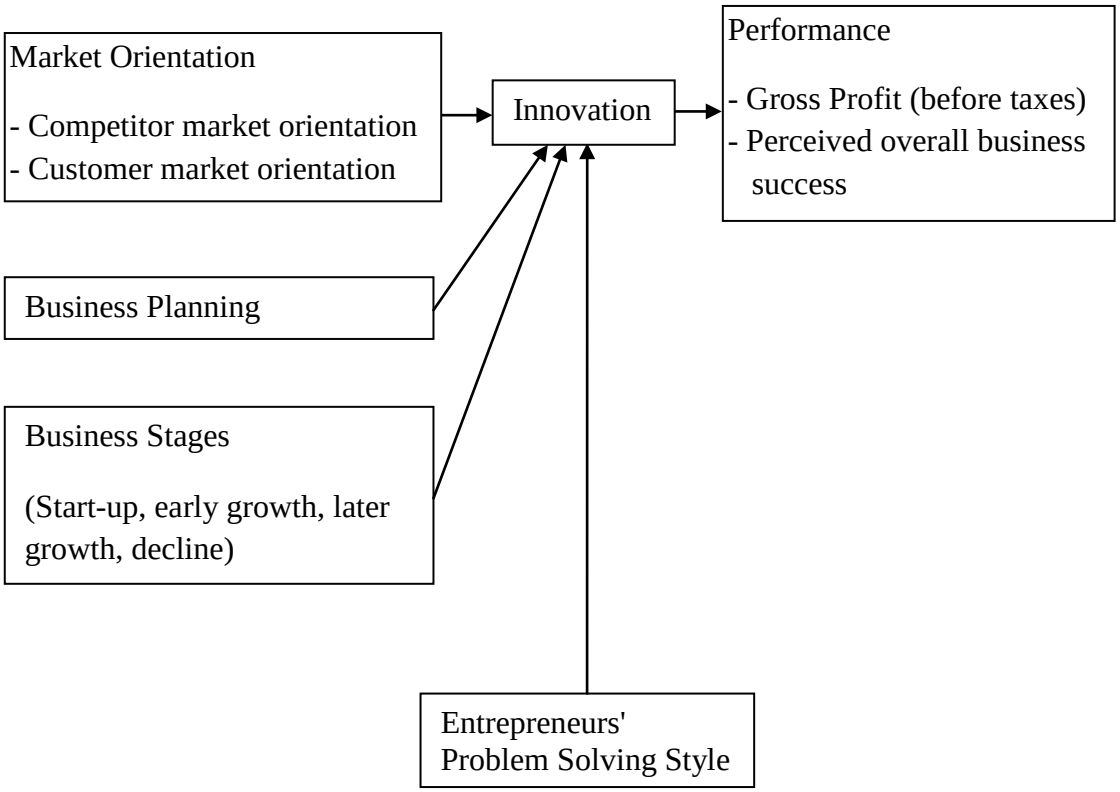
influence innovative work behavior: first, corresponding to an efficiency-oriented perspective, beliefs about the positive or negative consequences of innovative work behavior on job performance; and second, relating to a social-political perspective, beliefs about the potential image risks and image gains.

Innovation has been considered a human behavior since research on innovation spread from administrative science, communications, and anthropology to psychology and sociology in the 1980s (West and Farr 1990). First psychological works on innovation coined the term “innovative work behavior”. It can be defined as the intentional generation, promotion and realization of new ideas within a work role, workgroup or organization in order to benefit role performance, the group or the organization (West and Farr 1990).

Innovative work behavior consists of a set of behaviors (Scott and Bruce 1994; de Jong and den Hartog 2010, Janssen 2000): *opportunity exploration* and *idea generation* include looking for and recognizing opportunities to innovate and producing ideas and solutions for the opportunities. Next, *championing* refers to promoting the generated idea for the purpose of finding support and coalition building. Finally, *appli*cation makes the supported idea really happen. It includes developing, testing, modifying, and commercializing the idea.

The third conceptual model adopted in this study is the model of Yun-Jung Choi (2002). The researcher stated that there is relationship between firm's market orientation and its innovation, and the innovation will lead to business performance. Moreover, the impact of entrepreneur's problem solving style, business planning and business stages on innovation is also observed. This model is shown in Figure (2.4).

Figure (2.4) Market Orientation, Business Planning, Business Stages, Problem Solving Style and Innovation



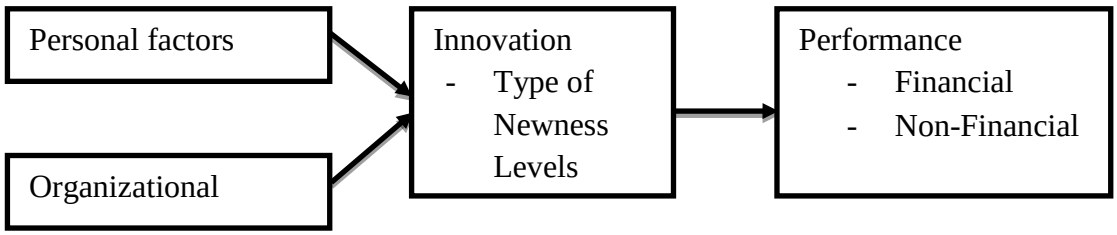
Source: Yun-Jung Choi (2002)

In this study, the market orientation is considered as one of the factors influencing Myanmar women entrepreneurs' innovation. Moreover, it is also assumed that entrepreneur's problem solving style, business planning and business stages have impact on innovation.

2.6 Conceptual Model and Analytical Framework of the Study

In this study, a conceptual model is developed to analyze the innovation of Myanmar women entrepreneurs. This model is adopted from previous researchers' models as mentioned above. It is shown in Figure (2.5). The analytical model is also developed based on this conceptual model.

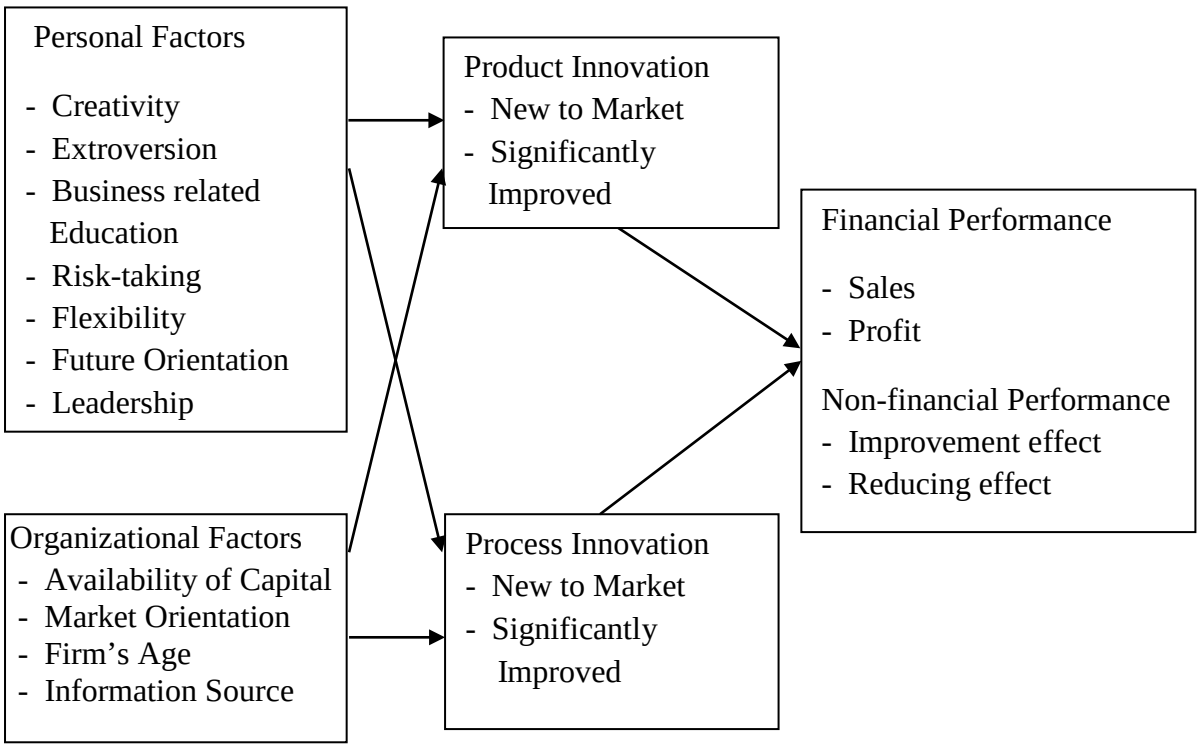
Figure (2.5) The Conceptual Model



Source: Own Compilation

The analytical model is also developed based on the above conceptual model. In the analytical model, the specific personal factors and organizational factors are shown. The categories of innovation by types and newness level are also shown. The measurements of performance are also identified. The analytical model of this study is shown in Figure (2.6).

Figure (2.6) The Analytical Framework



Source: Own Compilation

2.7 Variables Included in Analytical Framework of the Study

The variables included in the analytical framework of the study are extracted from literature review on some related research journals. Although the literature review focuses on all variables discussed by researchers, filtering is made to be in line with the situations of SMEs of Myanmar women. Thus, not all variables of literature review are accounted for this analytical framework.

Swayne and Tucker (1979) pointed out that the **firm's age** has an impact on entrepreneur's innovation. From review on their article of "the effective entrepreneur", the variable of firm's age is assumed, for this study, as an organizational factor affecting on firm's innovation. This literature review is followed by observation and in-depth interviews with some innovative women entrepreneurs. From such qualitative research (observation and in-depth interview), this assumption is confirmed because selected women entrepreneurs said that their innovation is largely related to firm's age.

Hyvarinen (1990) presented about the innovativeness and its indicators in SMEs. Review on this article pointed out that the **educated personnel** are important for firm's innovation, and the educated personnel can be viewed as the organizational factor which is influencing on firm's innovation. In 1994, Oldenboom and Kleinknecht conducted a case study on innovation in Russian Region. They also presented that the innovation depends on qualified personnel. Thus, at a first glance, the variable of educated personnel is assumed that the organizational factor affecting innovation in SMEs owned by Myanmar women. However, from observation and open discussion with some respondents, it is found that most of the Myanmar SMEs are running with very few educated employees. Moreover, it is also found that the success of some innovative SMEs is mainly resulted from creative ideas of entrepreneurs, rather than from ideas of employees. The firm cannot gain success through innovation without the commitment of entrepreneurs even though their employees are educated. Thus, in the context of Myanmar SMEs, especially in SMEs owned by women, the factor – educated personnel – is neglected to consider as organizational factor influencing innovation of SMEs owned by Myanmar women.

Dodgson and Rothwell (1994) stated that **firm's size** has an effect on firm's innovation. They highlighted that whereas large firms have material advantages, small

firms have behavioral advantages. This point expressed the relationship between size and innovation. However, this article's main objective is to compare the innovation of large firms with small firms' innovation. This study is not the comparative study of small and large firms' innovation. Thus, this point will not support to objectives of this study. In this study, the variable of firm's size is neglected.

Heunks (1998) stated the relationships between entrepreneurs' creativity, innovation and firms' success. From review on the article presented by Heuncks (1998), some important variables can be extracted for this study. By reviewing the article, it is found that innovation and success of SMEs depend on **entrepreneurs' creativity**, especially at the start-up stage. The major focus of the article is the affect of organizational factors and personal factors on innovation and success of SMEs. In this research, organizational factors influencing innovation are **availability of capital, information source, cooperation and qualified personnel**; and personal factors affecting innovation are entrepreneurs' **business related education, extraversion, future orientation, flexibility, self-confidence, and risk-taking**. All these factors except cooperation and qualified personnel are supported by the qualitative research of observation and in-depth interview conducted at selected some innovative SMEs. As mentioned above, qualified personnel is not directly supporting to innovation at SMEs. Moreover, for SMEs in Myanmar, there has not yet been developed the system to cooperate for innovation with other firms, government, suppliers, distributors and customers. Entrepreneurs themselves also inherently like freedom and they are reluctant to cooperate with others. Thus, in this study, organizational factors of availability of capital and information source and personal factors of entrepreneurs' business related education, extraversion, future orientation, flexibility, self-confidence, and risk-taking are taken into account for analytical model.

Choi (2002) presented about the effect of **market orientation** of entrepreneurs on innovation in the Ph. D Dissertation paper of "Market Orientation and Innovation in U.S Small Business Firms in Small Towns". The research of Choi proved that there is a strong relationship between firm's market orientation and its innovation. From observation and in-depth interview with some selected innovative Myanmar women entrepreneurs also supported to this point. They said that in-touch with customers, focus on market, observation on customers' expectation, commitment to further improvements, attention to feedback from customers, consulting about market trends,

scanning competitors' strategies, and firm's ability to change are largely supporting to successful innovation in their firms. Thus, in this study, market orientation is considered as one of the organizational factors affecting on innovation of SMEs owned by Myanmar women.

Daft (2003) presented the theory of innovation by mentioning that creativity is the essential first step in innovation, and it is also necessary for firm's long-term success. Kapp (2003) also presented the psychological model of entrepreneurial behavior. This research focused on personal factors of entrepreneurs for successful innovation. These personal factors are entrepreneurs' characteristics of **accomplishment, locus of control, motivation, innovativeness, and risk-taking**. In this study, although entrepreneurs' personal traits are approached, the research questions are not related to psychological need levels of entrepreneurs. Thus, the personal characteristics of achievement and motivation are excluded from analytical model. Moreover, in theories, innovativeness is equivalent to creativity, and locus of control and entrepreneur's trait of flexibility are side by side. Thus, in this study, innovativeness and locus of control are replaced with creativity and flexibility.

Mahemba and Bruijn (2003) conducted a research on innovation activities by SMEs in Tanzania. They presented that the **time horizon** to measure effect of innovation on performance of SMEs in developing countries should be at least three years. In this study, this time horizon is scoped to measure the relationship between innovation and performance of SMEs owned by Myanmar women.

Bentley (2006) pointed out the fact that **employee work innovative behavior** influences on innovation. Dörner (2012) also supported to Bently's point by presenting that employee innovative behavior is related to innovation. However, this study mainly focuses on entrepreneur's innovation, not on employee innovativeness. Thus, this point is neglected in this study.

Baderman (2009) stated that women's **self-efficacy** will influence on innovation, and it is different from men's. Although this study intends to analyse the factors affecting on innovation, the scope is limited to exclude the comparison between effect of women's and of men's capabilities on innovation. Moreover, the major assumption in this study is that the data about women entrepreneurs' **business related education** (experiences, knowledge, and formal and informal education of

businesses they are doing) is more valid than the data of self-efficacy. Thus, in this study, the business related education of women business-owners is included instead of the variable of self-efficacy.

In this study, innovation is approached from two aspects: type and newness level. This point is also included in analytical model of this study. This approach is adapted to **definitions of innovation** presented by Tidd and Bessant (2010). Tidd and Bessant (2010) defined product/service innovation is launching new or significantly improved product or service, and process innovation is practicing new or significantly improved process for manufacturing product or delivering service. According to these definitions, in this study, innovation is classified by type (product or process) and by newness level (totally new to market/industry or significantly improved on existing product or process of current market or industry).

Rieger (2012) mentioned that many personal traits are common for both men and women entrepreneurs but the **self-confidence** of women will differ from men and this difference may influence on women's innovation. This study excludes this point because the objective of this study is not to compare the influence of women traits on innovation with men. Moreover, risk-taking trait is already included instead of self-confidence.

Jaffer (2013) presented that leadership affinities influence on innovation. This point is counted for this study. Thus, in the analytical model, **leadership** is one of the personal factors influencing innovation in SMEs owned by Myanmar women.

Thus,the effect of personal factors – creativity, extroversion, business related education, flexibility, future orientation and leadership – and the effect of organizational factors – availability of capital, firm's age, information source, and market orientation on innovation are analyzed. However, before doing analysis, the prior assumptions are made by referring information gained from observation and in-depth interview with some selected innovative women owners of SMEs.

The first assumption is that not all personal factors will not effect on innovation; only creativity, flexibility and future orientation traits will effect on product innovation (either totally new or significantly improved over existing ones) in SMEs owned by Myanmar women. Creativity is necessary predecessor of innovation at any organizations and at any situations. New product or service will not be emerged

without having ideas (creativity). In Myanmar SMEs, to launch product or to practice process which are totally new to market or industry, only one more trait may be needed is future orientation. To launch a new product or to practice a new process, good idea (creativity) is necessary. However, having creative thinking skills (ideas) alone will not be enough to launch new product which is tailored to consumers' dream and expectation. This skill will be applicable when entrepreneur is a visionary one. Entrepreneur needs to keep in touch with market and must have ability to foresee the future so that consumers will be ready to accept the new product as well as the new process will be economically applicable for a long term. According to these assumptions, Hypothesis (1) and Hypothesis (3) are proposed in this study.

The influencing factors of innovation which is significantly improved on existing product or process would be different from factors influencing innovation which is totally new to market or new to industry. However, for any type of innovation, the creativity is preceding factor because economic reality (innovation) can come from idea. Thus, it is assumed that a factor influencing innovation which is significantly improved on existing ones is creativity. Moreover, to innovate product or process which is significantly improved on existing product or process, entrepreneurs need to be flexible enough to justify existing ones for more convenience, more cost effective and more utility value to customers. By concerning organizational factors for innovation which is significantly improved on existing ones, firms should be old enough and capital for innovation must be available. Thus, it is assumed that firm's age and availability of capital are influencing factors of innovation which is significantly improved. However, to create significantly improved products, the information source is also important. Entrepreneurs need to scan the environment and seek information from various sources to create significantly improved products. This factor would not be critical in the case of practicing significantly improved processes.

As mentioned above, in this study, it is assumed that the personal factors of creativity and flexibility of entrepreneurs and the organizational factors of firm's age and availability of capital will influence on innovation which is significantly improved on existing product in market or existing process in industry. Moreover, one more organizational factor of information source will also influence on product innovation which is significantly improved. (Hypothesis 2 and Hypothesis 4) are proposed in this study.

The study also analyzed the relationship between innovation and performance of SMEs owned by Myanmar women. To gain higher sales, in Myanmar, entrepreneurs need to launch new products. However, for higher amount of profit, they would try to launch significantly improved products into market. To reduce cost and to reduce adverse effect on environment, they would practice process innovation. They may change their production processes or they may use new production processes for cost effectiveness and environmental sustainability. Thus, in this study, it is assumed that the performance measured by sales will come out from product innovation which is totally new to market, and the performance measured by profit resulted from product innovation which is significantly improved on existing products in market. It is also assumed that the observed effect (improvement effect and reduction effect) resulted from process innovation which is either new to industry or significantly improved on existing process in industry. (Hypothesis 5, Hypothesis 6 and Hypothesis 7) are proposed in this study.

Although the assumptions mentioned above are developed as hypotheses, all variables shown in analytical model are counted in analysis part of this study.

Chapter (3)

Research Methodology

This chapter consists of five components such as sampling procedure, variables in questionnaire, reliability and validity test, implications from pilot test, and testing assumptions of multiple linear regression method.

3.1 Sampling Procedure

At the first step, the sampling unit is identified. The sampling unit of this study is female who own businesses which are sized by employees between 5 and 100, and located in Yangon since before 2014 and still operating in 2017. The extent (geographical boundary) is within the Yangon City of Yangon Division. The time frame of data collection is from December 2016 to July 2017.

In this study, to decide on an overall approach and sampling procedure, it was first assessed which data sources and firm registries were available. To do the survey, it is very hard to get the specific sampling frame. Other research associations and organizations also faced this problem. Many research organizations mentioned this point. UNDP (2014) stated that meetings with authorities and business experts showed that there was very little current data available on small and medium enterprises in Myanmar and various registers at local or national level were incomplete and/or inaccurate. Even if firms can be located based on the information held in the company register, the number of firms that are non-operational is considerable, meaning that records do not take into account the status of the business.

DAFT (2016) also argued that Myanmar does not have a unified business registry (some SMEs are registered at Ministry of Industry, some are running informally, and some are registered at Myanmar Investment Commission) and so estimates on the private sector vary. Even the Ministry of Industry can give estimate number of SMEs. Although government authorities know the informal SMEs, the data

have not yet been established. A separate study notes that most enterprises are informal and so are not captured in official data (DAFT, 2016). Moreover, using a registry would not have allowed the systematic inclusion of information on informal businesses (Amine & Stockmann, 2015). Thus, in this study, relatively more systematic and accurate sampling frame developed by German Institute for Development Evaluation (DEval) and the Center for Evaluation (CEval) on a comprehensive baseline study for the German-Myanmar survey on small and medium-sized enterprises in Myanmar is adopted.

As all available national registries were considered to be incomplete or outdated and more information on the number and situation of unregistered enterprises was required, DEval group applied two step approaches. At the first step, survey cities were selected so as to reflect the socio-economic and of the country and the sectoral distribution of businesses in Myanmar. Further selection criteria were growth potential and high densities of SMEs. Based on these criteria, the eleven cities were selected: Bago, Kale, Lashio, Mandalay, Mawlamyine, Monywa, Pathein, Pyay, Sagaing, Taunggyi, and Yangon.

At the second step, a block screening approach was applied. The idea of the block screening approach is that enumerators are deployed to one block in an area of a city with a high density of SMEs. All establishments that resemble a business are then screened using a short questionnaire. The questionnaire collects basic information about the firm, which is then used to generate the sampling frame. Due to delays in obtaining all the necessary permits for data collection, they conducted the block screening successively in all cities between February and September 2014. Within every city, blocks with high economic activity were chosen and basic information on all existing enterprises was collected. Based on this list, a sampling frame was constructed. This sampling frame is adopted in this study.

In this survey, the 11 cities throughout Myanmar were selected with the criteria as mentioned above. The list of SMEs and population in these eleven cities is shown in Table (3.1).

Table (3.1) Number of SMEs in Eleven Cities of Myanmar (2014)

Sr. No.	Cities	Number of SMEs
1	Pyay, Bago Division	344
2	Monywa, Sagaing Division	722
3	Mandalay, Mandalay Division	1,346
4	Lashio, Shan State	292
5	Kalay, Sagaing Division	76
6	Taunggyi, Shan State	267
7	Sagaing, Sagaing Division	274
8	Mawlamyine, Mon State	89
9	Bago, Bago Division	355
10	Pathein, Ayawaddy Division	178
11	Yangon, Yangon Division	1,965
Total		**5,908**

Source: SME Survey Myanmar 2015, DEval Baseline Study, German Institute for Development Evaluation (DEval)

In this study, women entrepreneurs (women who owned SMEs) in Yangon city of Yangon Division are targeted as population. Thus, this study covers only Yangon city. The findings cannot generalize for all women entrepreneurs of Myanmar. However, the selected area (Yangon) is the most SMEs populated area of Myanmar. Moreover, Yangon is a well-known city where the Myanmar's famous entrepreneurs' associations (Myanmar Women Entrepreneur Association and Myanmar Youth Entrepreneur Association) are located. Moreover, there are relatively more opportunities (e.g., transportation, having industrial zones, population density and so on) are attractive in Yangon for SMEs development and growth.

In Yangon, the 20 percent of SMEs are owned by women. Thus, the population of this research is 393 (20 percent of 1965). Although the data is 2014 data, it is valid for this research due to the required time horizon of innovation.

Christopher and Eric (2003) described that the time-frame of three years is relevant because of the nature of the measurements used required owners of SMEs to provide accurate estimates of their innovativeness.

To identify the sample size, the following formula of Yamane (1973) is applied:

$$n = \frac{N}{1 + N\ (e)^2}$$

In this formula, the sampling deviation (e) is 0.1 (90% of level of precision).

$$n = \frac{393}{1 + 393\ (0.1)^2}$$

Thus, the sample size is 80.

3.2 Pilot Study

Pilot survey is conducted to filter out some question-items from the questionnaire if these items are ambiguous for respondents or not supporting to research questions.

To complete and to validate the questionnaire, the pilot study is conducted during the November, 2017 by making personal interviews with 10 women business-owners who are running SMEs. After pilot study, the questionnaire (first version) is modified by removing some question items which are ambiguous and unnecessary to be included in final version. The modifications made after pilot can be seen in Table (3.2).

Table (3.2) Question Items Removed After Pilot Study

Sr. No.	Variable	No. of Question Items Removed	No. of Question Items Left after Removing
1	Creativity	1	16
2	Risk-Taking	2	10

Source: Survey, 2017

As shown in Table (3.2), questions for only two variables are modified after the pilot study. Questions for all other variables are remained unchanged.

3.3 Reliability Test

For reliability of data collected from 80 respondents, the Cronbach's Alpha values are tested for all variables for which Likert type scale questions items are developed. The Cronbach's Alpha values of personal factor variables are shown in Table (3.3).

Table (3.3) Reliability of Data for Personal Factors

Sr. No.	Variables	Cronbach's Alpha	No. of Items
1	Creativity	0.876	16
2	Extroversion	0.663	13
3	Risk-Taking	0.660	10
4	Flexibility	0.898	10
5	Future Orientation	0.659	14
6	Leadership	0.690	15

Source: Survey Data, 2017

As shown in Table (3.3); Cronbach's Alpha values for creativity, and flexibility are greater than 0.7[6]. Thus, the reliability of data for these variables is acceptable. Although the values of data for extroversion, risk-taking, future orientation and leadership variables are less than 0.7, the values are near to 0.7. Thus, it can be said that the data for these variables are also reliable.

The Cronbach's Alpha values of organizational factor variables are shown in Table (3.4).

[6] The reliability coefficient of .70 or higher is considered "acceptable" in most social science research situations (Cohen R, Swerdlik M, 2010)

Table (3.4) Reliability of Data for Organizational Factors

Sr. No.	Variables	Cronbach's Alpha	No. of Items
1	Availability of Capital	0.658	4
2	Market Orientation	0.741	12
3	Information Source	0.749	12

Source: Survey Data, 2017

As shown in Table (3.4); Cronbach's Alpha values for market orientation and information source are greater than or equal to 0.7. Thus, the reliability of data for these variables is acceptable. Although the value of data for availability of capital is less than 0.7, the value is near to 0.7. Thus, it can be said that the data for this variable is also reliable.

In this study, the performance is measured with not only financial measurements (sales and profit), but also the observed effect (non-financial measurements) of safety, quality, environmental and so on. This measurement is with Likert type five points scale. Thus, the reliability test is also conducted for this measure. The Cronbach's Alpha value for this measure of 6 items is 0.826. Thus, the reliability is strong for this variable.

3.4 Validity Test

In this study, the question items' validity is also tested with factor analysis. As preliminary analysis, the R-matrix (correlation matrix) is checked. The top half of this matrix contains the Pearson correlation coefficient between all pairs of questions whereas the bottom half contains the one-tailed significance of these coefficients. First, the significance values are scanned for any variable for which the majority of values are greater than 0.05. Then, the correlation coefficients are scanned for any greater than 0.9. If any are found, then check the determinant of the correlation matrix to avoid the problem of singularity in the data. The determinant should be greater than the necessary value of 0.00001. If the determinant value is greater than 0.00001, multicollinearity is not a problem for these data. This means that there is no auto-correlation between variables (in this case of validity test for data, variables mean

question items). If there is problem, it will be needed to eliminate variables (question items) causing the problem. If there is a problem, it can be assumed that respondents gave same scores for some question items due to the same meanings of these question items.

After preliminary analysis, the other important parts should be evaluated. These parts are Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The KMO statistic varies between 0 and 1. A value of '0' indicates that the sum of partial correlations is large relative to the sum of correlations, indicating diffusion in the pattern of correlations. Thus, factor analysis is likely to be inappropriate. A value close to 1 indicates that patterns of correlations are relatively compact and so factor analysis should yield distinct and reliable factors. Kaiser (1974) recommends accepting values greater than 0.5 as acceptable. Values below this should lead to either collect more data or rethink which variables to include. For factor analysis to work, the test should be significant with value less than 0.05 from Bartlett's measure. If the significance value is less than 0.05, there are some relationships between variables and the R-matrix is not identity matrix. Thus, the factor analysis will work for the test.

3.4.1 Validity Test for Personal Factors

There are 7 variables (personal factors) which are assumed as factors influencing innovation of SMEs owned by Myanmar women. The factors (with Likert type scale) applied in this study to test their influence on innovation of SMEs owned by Myanmar women are creativity, extroversion, risk-taking, flexibility, future orientation, leadership and business related education. The important indicators of factor analysis for these 6 variables are shown in Table (3.5).

Table (3.5) Validity of Data for Personal Factors

Sr. No.	Variables	Determinant	KMO	Significance
1	Creativity	1.17E – 5	0.723	.000
2	Extroversion	2.57E – 5	0.580	.000
3	Risk-taking	0.004	0.659	.000
4	Flexibility	1.46E– 5	0.787	.000
5	Future Orientation	5.43E – 5	0.650	.000
6	Leadership	1.84E – 5	0.553	.000

Source: Survey Data, 2017

Creativity

For creativity variable, the items are adopted from Caird, (2013) who explored the 12 items to measure creativity. These items are also used in GET (General measure of Enterprising Tendency test) and can be assessed from www.get2test.net online link. The second source is adopted from Francis, (2016). Francis presented 17 items to test the creative thinking skills of entrepreneurs. However, only 5 items out of these 17 are relevant to add to the 12 items of first source. The other items of second source are overlapped with 12 items selected from first source. To examine the creativity of Myanmar women business-owners, not only their creativity trait but also their creative thinking skills should be tested. Thus, these two sources are based, and the 17 items are applied to measure creativity. The five point Likert-type scale is applied (strongly disagree, disagree, neutral, agree, and strongly agree).

According to the feedback from pilot survey with 40, the question item number (17) which is "I can see what the root cause of a problem is to challenge the current situation" is quite ambiguous for respondents, and many respondents cannot give answer for this item. Thus, this item is removed from questionnaire. The data collected for the rest 16 items are tested for validity.

From validity test with factor analysis, the determinant is 1.17E – 5. This value is greater than 0.00001. Thus, multicollinearity is not a problem for these data. KMO value is 0.723 which is greater than 0.5. Thus the patterns of correlation are

relatively compact and the factor analysis will yield distinct and reliable factors. Bartlett's test is highly significant ($p<0.001$), and therefore factor analysis is appropriate. R-matrix is not the identity matrix. This means some relationships between the variables will include in analysis (Field, 2005). After factor loadings, all items are retained with Eigenvalues greater than 1 and loading value above 0.6.

Extroversion

The thirteen items are adopted from items developed by Baxter and Belpaeme (2016). Data are collected with five point Likert scale (from strongly disagree to strongly agree). In this study, these 13 items are tested for validity.

From validity test with factor analysis, the determinant is 2.57E-5). This value is greater than 0.00001. Thus, multicollinearity is not a problem for these data. KMO value is 0.580 which is greater than 0.5. Thus, the patterns of correlation are relatively compact and the factor analysis will yield distinct and reliable factors. Bartlett's test is highly significant ($p<0.001$), and therefore factor analysis is appropriate. R-matrix is not the identity matrix. This means some relationships between the variables will include in analysis. After factor loadings, all items are retained with Eigenvalues greater than 1 and loading value above 0.6.

Risk-Taking

In this study, the major focus for this personal factor is on calculated risk-taking. Thus, the questionnaires focused only on calculated risk-taking are reviewed. The identification of Hian Chye Koh (1996) with entrepreneurial self - assessment scale of Technonet Asia, 1981, is applied in this study. The questionnaire composes of 6 items. Moreover, the other 7 items developed by Makarowski, Plopa and Marszall (2011) are adopted. Their questionnaire instrument is named as (S & IRQ): The Stimulating and Instrumental Risk Questionnaire). They already tested their items for both reliability and validity in their research. From these two sources, in this study, the total 12 items are adopted. However, after the pilot survey, most of the respondents gave suggestions to remove 2 items out of these 12 because these 2 items are not relevant to test entrepreneur's risk-taking for business issues, and not related to calculated risk-taking.

The data collected for remaining 10 items are tested for reliability and validity. From validity test with factor analysis, the determinant is 0.004. This value is greater than 0.00001. Thus multicollinearity is not a problem for these data. KMO value is 0.659 which is greater than 0.5. Thus, the patterns of correlation are relatively compact and the factor analysis will yield distinct and reliable factors. Bartlett's test is highly significant ($p<0.001$), and therefore factor analysis is appropriate. R-matrix is not the identity matrix. This means some relationships between the variables will include in analysis. After factor loadings, one item is deleted. All other items are remained with Eigenvalues greater than 1 and loading value is 0.6.

Flexibility

Flexibility is measured with 10 items extracted from items developed by Ben-Itzhak S, Bluvstein I, Maor M, 2014. Their test is known as PFQ – The Psychological Flexibility Questionnaire (PFQ).

The data collected for these 10 items are tested for reliability and validity. From validity test with factor analysis, the determinant is 1.46E – 5). This value is greater than 0.00001. Thus multicollinearity is not a problem for these data. KMO value is 0.787 which is greater than 0.5. Thus the patterns of correlation are relatively compact and the factor analysis will yield distinct and reliable factors. Bartlett's test is highly significant ($p<0.001$), and therefore factor analysis is appropriate. R-matrix is not the identity matrix. This means some relationships between the variables will include in analysis. After factor loadings, no items need to be deleted. All items are remained with Eigenvalues greater than 1 and loading value above 0.6.

Future Orientation

Future orientation is measured by a scale composing of 14 items developed by Beal, Sarah J., (2011). These items are already tested by psychological researcher with large scale survey. However, in this study, these items are tested for reliability and validity. From validity test with factor analysis, the determinant is 5.43E – 5). This value is greater than 0.00001. Thus, multicollinearity is not a problem for these data. KMO value is 0.650 than 0.5 (it is acceptable). Thus, the patterns of correlation are relatively compact and the factor analysis will yield distinct and reliable factors. Bartlett's test is highly significant ($p<0.001$), and therefore factor analysis is

appropriate. R-matrix is not the identity matrix. This means some relationships between the variables will include in analysis. After factor loadings, all items are remained with Eigenvalues greater than 1 and loading value above 0.6.

Leadership

In this study, leadership skill of entrepreneur is measured from transformational leadership approach because entrepreneurs should have ability to transform the status-quo for their innovation.

Leadership is measured by a scale composing of 15itemswhich are based from original 21 items of multifactor leadership style questionnaire (MLQ) [7] . The Multifactor Leadership Questionnaire measures leadership on seven factors such as idealized influence, inspirational motivation, intellectual stimulation, individualized consideration, contingent reward, management-by-exception, and laissez-faire leadership.

Factor 1(*Idealized Influence)* indicates whether respondents hold subordinates' trust, maintain their faith and respect, show dedication to them, appeal to their hopes and dreams, and act as their role model. Factor 2 (*Inspirational motivation)* measures the degree to which respondents provide a vision, use appropriate symbols and images to help others focus on their work, and try to make others feel their work is significant. Factor 3 (*Intellectual stimulation)* shows the degree to which respondents encourage others to be creative in looking at old problems in new ways, create an environment that is tolerant of seemingly extreme positions, and nurture people to question their own values and beliefs and those of the organization. Factor 4 (*Individualized consideration)* indicates the degree to which respondents show interest in others' well-being, assign projects individually, and pay attention to those who seem less involved in the group. Factor 5 (*Contingent reward)* shows the degree to which respondents tell others what to do in order to be rewarded, emphasize what they expect from them, and recognize their accomplishments. These five factors are relevant to test the transformational leadership skill of entrepreneur. Factor 6

[7] Multifactor Leadership Questionnaire by Dr. Jens Rowold, University of Muenster, Germany, Published by Mind Garden, Inc. info@mindgarden.com www.mindgarden.com

(*Management-by-exception)* assesses whether respondents tell others the job requirements, are content with standard performance, and are a believer in "if it isn't broke, don't fix it."Factor 7 (*Laissez-faire)* measures whether respondents require little of others, are content to let things ride, and let others do their own thing. The indications of these two factors are not directly relevant to transformational leadership skill of entrepreneur, especially to test the transformational leadership skill needed for innovation. In this study, the major focus is to measure the degree of transformational leadership skill, rather to differentiate transactional style and transformational style. Thus, the items of last two factors are neglected. The leadership measure is originally with 21 items, and 3 items for each factor. However, in this study, the 6 items of Factor 6 and Factor 7 are removed. The rest 15 items are applied in this study. Likert type 5-point scale is used (not at all, once in a while, sometimes, fairly often, frequently).

These items are tested by many psychological researchers many times. However, in this study, these items are tested for reliability and validity by using data collected from survey.

From validity test with factor analysis, the determinant is 1.84E – 5). This value is greater than 0.00001. Thus multicollinearity is not a problem for these data. KMO value is 0.553 which is not greater than 0.5 but nearly to 0.5 (it is acceptable). Thus, the patterns of correlation are relatively compact and the factor analysis will yield distinct and reliable factors. Bartlett's test is highly significant ($p<0.001$), and therefore factor analysis is appropriate. R-matrix is not the identity matrix. This means some relationships between the variables will include in analysis. All items are remained with Eigenvalues greater than 1 and loading value above 0.6. No item should be deleted.

3.4.2 Validity Test for Organizational Factors

There are 4 factors which are assumed as factors influencing on innovation of SMEs owned by Myanmar women. These factors are availability of capital, market orientation, information source, and observed effect on product range, market scope, quality, labour cost, materials and energy per unit output, environment and health and

safety. These items are approached with Likert scale. Thus, the reliability test and validity tests are conducted. Firm's age is collected as scale type continuous variable.

The Availability of Capital

To innovate products/services or to practice innovative processes, finance would be crucial factor. To assess finance would be very difficult for some business-owners although it would be easy for some. In this study, the 4 items are used with 5-point Likert scale.

From validity test with factor analysis, the determinant is 0.330. This value is greater than 0.00001. Thus, multicollinearity is not a problem for these data. KMO value is 0.633 which is greater than 0.5. Thus, the patterns of correlation are relatively compact and the factor analysis will yield distinct and reliable factors. Bartlett's test is highly significant ($p<0.001$), and therefore factor analysis is appropriate. R-matrix is not the identity matrix. This means some relationships between the variables included in analysis. After factor loadings, all items are remained with Eigenvalues greater than 1 and loading value above 0.6.

Market Orientation

This variable is measured with 12 items developed by Yun-Jung Choi (2002). These 12 items are tested in the PhD Dissertation paper of Iowa State University.[8] These items are tested for reliability and validity with data collected from 40 respondents of pilot survey.

From reliability analysis, the Cronbach's Alpha value is 0.741 which is greater than 0.7 (acceptable value for reliability). From validity test with factor analysis, the determinant is 0.001. This value is greater than 0.00001. Thus multicollinearity is not a problem for these data. KMO value is 0.586which is greater than 0.5. Thus the patterns of correlation are relatively compact and the factor analysis will yield distinct and reliable factors. Bartlett's test is highly significant ($p<0.001$), and therefore factor analysis is appropriate. R-matrix is not the identity matrix. This means some relationships between

[8] Market orientation and innovation in U.S. small business firms in small towns' in Published PhD Dissertation paper of Iowa State University, Yun-Jung Choi (2002)

the variables will include in analysis. The communalities for all items is 1. Thus, the data are also strong. After factor loadings, all items are remained with Eigenvalues greater than 1 and loading value above 0.6. Thus, all 12 items are valid.

Information Source

The practice of entrepreneurs on information interpretation is approached with 9 items which are extracted from the community innovation survey, 2012. There are originally 14 items but the 5 items are not directly related to information practice: the 2 items more emphasized on education for employees, and the 3 can be applied in large organizations. The selected 9 items are tested for reliability and validity in this study.

From validity test with factor analysis, the determinant is 0.012. This value is greater than 0.00001. Thus, multicollinearity is not a problem for these data. KMO value is 0.586 which is greater than 0.5. Thus, the patterns of correlation are relatively compact and the factor analysis will yield distinct and reliable factors. Bartlett's test is highly significant ($p<0.001$), and therefore factor analysis is appropriate. R-matrix is not the identity matrix. This means some relationships between the variables included in analysis. After factor loadings, all items are remained with Eigenvalues greater than 1 and loading value above 0.6.

3.5 Criteria to Measure Innovation

Innovation is measured with number of times the women business-owners transformed ideas into new or significantly improved products or services during recent three years (from 2014 to 2017 inclusive). However, if women business-owners could not send these new or significantly improved products or services to market, the times of transforming ideas into such products or services are not counted in analysis. Moreover, if she had to stop the transforming idea into new or significantly improved processes of manufacturing products or delivering services during the testing stage, the times of transforming ideas into such new or significantly improved processes are not included in this study. In other words, to identify as innovation, women business-owners must transform ideas into reality and this reality must be seen in market. In questionnaire, it is clearly mentioned to exclude the simple

resale of new goods purchased from other enterprises and changes of a solely aesthetic nature.

For product innovation, the data are collected for number of times of making new products, and of making significantly improved products. For process innovation, the data for number of times of using new processes of manufacturing products, and of using significantly improved processes of delivering services. Thus, in this study, there are two types of innovation: product and process. Each type consists of two categories. Thus, this study focuses on total four categories such as new product, significantly improved product, new process, and significantly improved process. All data for innovation are in scale type.

3.6 Criteria to Measure Performance

Performance is evaluated with two aspects: financial and non-financial effects. Financial performance is evaluated with sales revenue and profit got in 2017 as the effect of innovations made during 2014 and 2017 (inclusive). Non-financial performance data are increased range of goods or services, entered new markets or increased market share, improved quality of goods or services, reduced labour costs per unit output, reduced materials and energy per unit output, and reduced environmental impacts or improved health and safety.

3.7 Research Instrument

As the survey instrument, the structured questionnaire is developed. The questionnaire includes four parts: part (A) is for women business-owners demographic profiling, part (B) is to investigate types of innovation, part (C) is to explore the factors influencing innovation, the final part: part (D) is to evaluate the performance of SMEs owned by Myanmar women.

Part (A) is for demographic profile with ownership, age, and firm's profile with firm's age, type of business, and size by number of employees. In part (B); personal factors are assessed. Part (C) is to collect data about organizational factors. Part (D) is to explore the extent of practicing each type of two common types of innovation (product innovation and process innovation), and final part (part E) is about the performance with financial and non-financial criteria.

3.8 Data Collection and Data Analysis Method

Although the questionnaire is structured, data are collected with long personal interview. The data needed are very comprehensive and complex. Thus, interviewer needs to explain in detail for some parts of questionnaire. Interviewers asked for special appointments to get data from respondents. Data are collected during December, 2017 and January, 2018.

For data analysis, descriptive statistics methods are applied to show the frequency tables and mean values as necessary. The factor analysis is also applied for validity test. Step Wise Regression method analysis is finally conducted for major findings of this study.

3.9 Assumptions of Multiple Linear Regression

To practice the multiple linear regression method, the necessary assumptions of this method must be tested. When running a multiple regression, there are some assumptions to check data in order for analysis to be reliable and valid.

Assumption 1 is that “the relationship between the independent variables and dependent variable is linear”. The first assumption of Multiple Regression is that the relationship between independent variables and dependent variable can be characterized by a straight line. This assumption can be tested by looking at the distribution of residuals. This can be tested by reviewing the normal probability plot.

Assumption 2 is that “there is no multicollinearity in data”. This assumption is to test that the independent variables are not too highly correlated. This can be done by two ways. First, in correlations table, correlations of more than 0.8 may be problematic. If this happens, it is needed to consider remove one or more of independent variables. Second, it can be conducted to more formally check on independent variables are not too highly correlated. For the assumption to be met(no multicollinearity in independent variables), VIF scores to be well below 10, and tolerance scores to be above 0.2.

Assumption 3 is that “the values of the residuals are independent”. Durbin-Watson statistic in model summary box of SPSS output can be checked. This test is for independent variables to be independent or uncorrelated. This statistic can be vary

from 0 to 4. For this assumption to be met, this value should be close to 2. Values below 1 and above 3 are cause for concern and may render analysis invalid.

Assumption 4 is that “the variance of the residuals is constant”. This assumption (assumption of homoscedasticity) is the assumption that variation in the residuals (or amount of error in the model) is similar at each point of the model. The scatter plot should like a random array of dots. If the graph looks like a funnel shape, then it is likely that this assumption has been violated.

Assumption 5 is that “the values of the residuals are normally distributed”. This assumption can be tested by looking at the P-P plot for the model. The closer the dots lie to the diagonal line, the closer to normal the residuals are distributed.

Assumption 6 is that “there are no influential cases biasing the model”. This assumption can be tested by going back to data file and looking at the Cook’s distance values. Any values over 1 are likely to be significant outliers, which may place undue influence on the model, and should therefore be removed and analysis rerun.

All these assumptions are tested when making the multiple regression analysis in this study. The results are explained in Chapter (4).

Chapter (4)

Analysis on Innovation of SMEs Owned by Myanmar Women

This chapter shows the results of analysis on factors influencing innovation, types of innovation practiced at SMEs owned by Myanmar women and relationships between innovation and performance.

4.1 Profile of Surveyed SMEs Owned by Myanmar Women

In this study, to test the hypotheses as mentioned in Chapter 1, 80 SMEs are randomly selected from SMEs which are located in Yangon, they have at least 3 years of age and they are owned by Myanmar women.

For demographic factors of selected SMEs; data about firm's age, number of employees, type of business, and ownership form are collected from respondents. The profile of selected SMEs is shown in Table (4.1).

Table (4.1) Profile of Selected SMEs Owned by Myanmar Women

Sr. No.	Demographic Factors	Number of SMEs	Percentage(%)
1	Firm's Age		
	3 Years	43	53.75
	4 to 7 Years	20	25.00
	8 to 11 Years	12	15.00
	Above 11 Years	5	6.25
2	Number of Employees		
	10 Employees	37	46.25
	11 to 20 Employees	23	28.75
	21 to 30 Employees	10	12.50
	31 to 40 Employees	7	8.75
	41 to 50 Employees	3	3.75
3	Types of Business		
	Manufacturing	57	71.25
	Service	23	28.75
4	Ownership Form		
	Sole Proprietorship	45	56.25
	Partnership	5	6.25
	Company	30	37.50
Total		**80**	**100**

Source: Survey Data, 2017

As shown in Table (4.1), most of the respondents SMEs are young ones with 3 years of age, and they are running with about 10 to 20 employees. Over 70% of respondent SMEs are in type of manufacturing, only few firms are running as service businesses such as tourism, hotel, even management, education, retail, and health care businesses. Most of the respondent SMEs are with sole proprietorship ownership form and some are with company ownership form. Very few SMEs are in partnership form.

4.2 Analysis on Personal Factors

In this study the personal factors which are assumed as influencing factors on innovation are creativity, extroversion, risk-taking, flexibility, future orientation, leadership and business related education. The creativity personal-trait of surveyed 80 women business-owners can be seen in Table (4.2).

Table (4.2) Creativity of Myanmar Women Business-Owners

Sr. No.	Items	Mean Values
1	Rarely to feel day dreaming	3.80
2	Thinking about information almost obsessively until gaining new ideas and solutions	3.70
3	Conscientiousness of new ideas, gadgets and technologies	3.68
4	Prefer to be quite good at several things rather than very good at one thing	2.83
5	Like to have life organized so that it runs smoothly	3.91
6	Have so many ideas that make feel pressured	3.88
7	Prefer ideas to be unusual	3.81
8	Do not like unexpected changes to routines (Reverse)	3.51
9	Prefer to make changes and trying out new ideas	3.99
10	Prefer doing things in the usual way rather than trying out new methods	3.05
11	Like to spend time with people who have different ways of thinking	3.36
12	It is harder to adapt to change than keep to a routine	3.90
11	Able to turn creative ideas into workable solutions	3.99
12	Able to sell innovative/creative solutions to others	4.03
13	Able to build a collaborative way of working in team and in problem solving sessions	2.96
14	Able to see what is required to turn idea into action	3.53
Overall Mean		**3.62**

Source: Survey Data, 2017

As shown in Table (4.2), the creativity score of respondents is fairly high (greater than 3.5). It can be concluded that they are fairly good at creative thinking. However, according to the results of each item, it is found that they prefer to be quite good at several things rather than very good at one thing, and they are not good at collaboration with others to solve problems. Myanmar women business-owners are weakness in concentration and perseverance to be good at one thing. They would like to do several things. Moreover, they are normally like individually making decision and solving problem.

Extroversion can also influence on innovation. Thus, in this study, the extroversion level of Myanmar women business-owners is explored. The extroversion personal-trait of surveyed 80 women business-owners can be seen in Table (4.3).

Table (4.3) Extroversion of Myanmar Women Business-Owners

Sr. No.	Items	Mean Values
1	Like to meet with other people	3.80
2	Like to compete with others	3.70
3	Like to move and to do a great deal of activity	3.45
4	Like to be with others.	3.88
5	Able to easily say to others about thoughts (current thinking)	3.98
6	Say as think.	3.98
7	Like to do something not to get bored	3.81
8	Like to talk with others	3.88
9	Able to convince someone of current thinking	3.78
10	When speak, the others listen to and do as speak	3.75
11	Like to joke	3.91
12	Able to easily make friends	3.79
13	Living happily and lively	3.71
Overall Mean		**3.79**

Source: Survey Data, 2017

As shown in Table (4.3), the extroversion score of respondents is high (nearly 4). It can be concluded that they prefer to let others know what they know, what they do,

and what they intend to do. Although, in general, women would not be extrovert, the women who are running the businesses are extrovert. The strong reasons of doing businesses are to show their own success to family members, relatives and also to public. They do not want to rely on others, and they want people around them to recognize their initiatives.

To run own business, in Myanmar, women must take many risks such as risk of balancing time for child bearing and working, risk of not suitable to stay at office at nights with men although it is necessary for business, risk of lack of safety to go around for business, and so on. The risk-taking personal-trait of surveyed 80 women business-owners can be seen in Table (4.4).

Table (4.4) Risk-taking of Myanmar Women Business-Owners

Sr. No.	Items	Mean Values
1	Can be described as a risk taker	3.85
2	If the possible reward was high, would not hesitate putting money into a new business that could fail	3.68
3	Rarely take risks when there is another alternative	3.79
4	Enjoy risk-taking, that is what business is all about	3.89
5	Would participate only in business undertakings that are relatively certain	3.81
6	Feel risk-taking as an integral part of a challenging career	3.45
7	When pursue own passions, like the moments of balancing on the edge of risk	3.84
8	Taking risk only when it is necessary to reach goal	3.86
9	When have to take risk, carefully calculate the possibility of failure	3.74
10	Before taking a risky decision, always thoroughly consider all pros and cons	3.78
Overall Mean		**3.77**

Source: Survey Data, 2017

As shown in Table (4.4), the risk-taking score of respondents is fairly high (greater than 3.5). The respondents are calculated risk takers in doing business.

Myanmar women who are doing own-businesses instead of playing as pure housewives would have determination to overcome barriers to reach their goals, and they also enjoy to take risks of doing business.

To run own-business, women should be flexible enough to respond to changes of business environment. Sometimes they must practice very unconventional ways to fulfill customer expectation. Sometimes they even need to lead change. In this study, the flexibility of Myanmar women business-owners is tested. The flexibility personal-trait of surveyed 80 women business-owners can be seen in Table (4.5).

Table (4.5) Flexibility of Myanmar Women Business-Owners

Sr. No.	Items	Mean Values
1	When times are hard, even very hard, it is able to remember that there are better times ahead	3.80
2	In situations of changeable, it is able to initiate the required changes	3.45
3	Feel ready to accept future changes	3.35
4	It is easy to think of ways of conduct that are very unconventional	3.73
5	When encounter difficulties in achieving a goal, it is able to try numerous different solutions	3.94
6	An open person in comparison with others	3.80
7	It is important to learn from each and every person	3.46
8	In a disagreement, there are always numerous possible solutions	3.34
9	Concepts may possess different meanings when perceived in different contexts	3.68
10	There are usually many possible ways to do things	4.04
Overall Mean		**3.66**

Source: Survey Data, 2017

As shown in Table (4.5), the flexibility score of respondents is fairly high (greater than 3.5). Myanmar women would be flexible in dealing with people for good business relationships through which they would expect long term success in market.

This fact is also true in this case. According to itemized data, they are strong at tolerance in finding ways to do things. Women seemingly have proactive habit because normally they need to take responsibility to manage household income and expenses, and they must also manage expenses for health, social, and education affairs of family members. If they have future orientation, they can manage well. In doing business, most of the Myanmar women prefer planning before action. Thus, in this study, future orientation trait of Myanmar women business-owners is examined. The future orientation personal-trait of surveyed 80 women business-owners can be seen in Table (4.6).

Table (4.6) Future Orientation of Myanmar Women Business-Owners

Sr. No.	Items	Mean Values
1	Thinking about how things might be in the future	3.09
2	Making lists of things to do	3.34
3	Before making a decision, used to weigh the good vs. the bad.	3.48
4	Should give up own happiness now so that big aims can be achieved in future	3.59
5	Prefer to save own money for a rainy day, rather to spend it now on something fun	3.89
6	Thinking about the consequences before do something	3.35
7	Like to plan things out one step at a time	3.34
8	Making decisions and act without thinking about the big picture	3.54
9	Pretty good at seeing in advance how things will play out	3.95
10	Thinking things work out better after planning them in advance	3.68
11	Thinking often about what tomorrow will bring	3.68
12	Running through all the possible outcomes of a decision in mind before making decision on what to do	3.73
13	Usually not thinking about worth of something because it would make worry for it which cannot be predicted	3.61
Overall Mean		**3.56**

Source: Survey Data, 2017

As shown in Table (4.6), the future orientation score of respondents is not high (about 3.5). Although average Myanmar women like planning ahead doing and they have much concern about consequences of doing something, women business-owners do not think much about future and they do not spend much time in making list of things to do and also in planning details. They are not strong at future looking. Moreover, they are also not too rational. In Myanmar, it is not easy for average women to reach the leading role at home as well as at work and in society. However, in doing business, leadership competencies are necessary to gain success in market. Thus, in this study, leadership competencies of Myanmar women business-owners are tested. The leadership personal-trait of surveyed 80 women business-owners can be seen in Table (4.7).

Table (4.7) Leadership of Myanmar Women Business-Owners

Sr. No.	Items	Mean Values
1	Making others around feel good	3.71
2	Expressing with a few simple words what could and should do	3.56
3	Enable others to think about old problems in new ways	3.40
4	Helping others develop themselves	2.49
5	Telling others what to do if they want to be rewarded for their work	3.89
6	Providing recognition/rewards when others reach goals	3.81
7	Staff have complete faith in owner of firm	3.74
8	Providing appealing images about what can do	3.28
9	Providing others with new ways of looking at puzzling things	3.96
10	Letting others know about knowing what they are doing	2.89
11	Others are proud to be associated with owner of this firm	3.29
12	Helping others find meaning in their work	3.85
13	Getting others to rethink ideas that they had never questioned before	3.78
14	Giving personal attention to others	4.03
15	Calling attention to what others can get for what they accomplish	2.88
Overall Mean		**3.50**

Source: Survey Data, 2017

As shown in Table (4.7), the leadership score of respondents is not high (about 3.5). Respondents are weak in motivating and encouraging others. They are not

skillful to develop others. And they do not want to show people what they are thinking about them. However, Myanmar women business-owners show pretty much attention personally to others.

4.3 Analysis on Organizational Factors

The organizational factors which are assumed as factors influencing innovation are entrepreneur's market orientation and information practices, availability of capital, and firm's age. The first three factors (market orientation and information) are approached with Likert type scale. Firm's age is in ratio type data (scale type).

For market orientation practices, data are collected with 5 point Likert scale (1: Never, 2: Arbitrarily, 3: Sometimes, 4: Often, 5: Frequently). The results of market orientation practices are shown in Table (4.8).

Table (4.8) Market Orientation Practices of Myanmar Women Business-Owners

Sr. No.	Items	Mean Values
1	Managerial staff meet with customers to find out what products or services they will need in the future	2.85
2	Firm follows-up on sales/services to provide additional service	2.98
3	Managerial staff discuss customers' future needs	2.74
4	Managerial staff discuss competitive strengths and strategies	2.66
5	Business intentionally takes advantage of competitors' weaknesses	2.25
6	Business hire outside marketing consultants	2.09
7	When faced with decision-making situation, willing to take high risks	2.51
8	Business is quick to respond changes in the industry, the competition, or customer preference	3.43
9	Business responds quickly to negative feedback from customers	3.89
10	The marketing business does is based primarily on perception of customer needs	3.98
11	Competitive advantage is primarily maintained by understanding and meeting our customers' needs	3.91
12	In business, everyone works together to meet customers' needs	3.89
Overall Mean		**3.10**

Source: Survey Data. 2017

Respondents are moderately market oriented owners. The mean score is around 3. As shown in Table (4.8), Myanmar women business-owners are weak in doing market research, especially they are not active to take advantage over competitors' weaknesses. It is rare at their organizations to hire outside consultants for marketing. They also don't take high risks. The information collecting practice is also important for business success. In Myanmar, although women business-owners may collect information from various sources, they may not conscious on reliability of sources of information. Thus, in this study, the information taking practices of Myanmar women business-owners are examined. The information practices of respondents are shown in Table (4.9).

Table (4.9) Information Source of Myanmar Women Business-Owners

Sr. No.	Items	Mean Values
1	Employees in organization are an extremely important source of information	2.85
2	Previous decisions are a very useful source of information for current decisions	3.45
3	Organization uses a clipping service – the regular collection of papers and articles of interest to us	3.91
4	Reports prepared by external experts are an extremely important source of information	3.98
5	Competitors are an extremely important source for learning new methods and services	4.21
6	In any important decision, used to seek information or advice from sources outside the company (hiring experts, contacting top managers of other companies, etc)	2.78
7	Organization has employees whose job is related to searching for external information	3.61
8	External sources (reports, consultants, newsletters, etc.) are extremely important for the operations of organization	3.01
9	Frequently send employees to various seminars, workshops, conferences with intention to acquire information	3.12
Overall Mean		**3.44**

Source: Survey Data, 2017

As shown in Table (4.9), the level of information seeking and referring practices by Myanmar women entrepreneurs is at moderate level with mean score 3.44. It is found that they are not relying on outside information sources such as experts, top managers of other companies, etc. They also don't believe on their employees as reliable information source. However, they are watching their competitors, and they believe that competitors are an extremely important source for learning new methods and services.

The availability of capital is approached with four items by Liket type five-point scale (very easy to very difficult). At the one hand, if required capital is not available, women business-owners could not transform their creative ideas into reality. At the other hand, the innovation would not depend on financial strength, it would be resulted from owner's creative thinking and leadership. It is not sure to make conclusion. Thus, in this study, availability of capital is evaluated. Data are collected by 4 question items with 5 Likert scale (1: Very difficult, 2: somewhat difficult, 3: neither difficult nor easy, 4: somewhat easy, 5: vary easy). The results from survey are shown in Table (4.10).

Table (4.10) Availability of Capital at SMEs Owned by Myanmar Women

Sr. No.	Availability of Capital	Mean Values
1	Availability of capital to launch new product/service	2.98
2	Availability of capital to improve existing product/service	2.74
3	Availability of capital to practice new process of manufacturing or delivering service	2.66
4	Availability of capital to improve existing process of manufacturing or delivering service	2.25
Overall Mean		**2.66**

Source: Survey Data, 2017

It is difficult to conclude for general result on availability of capital. It may depend on may factors such as firm's success, firm's age, entrepreneur's personal

background and so on. According to data collected from 80 respondents, it is difficult to get capital for making innovation in firms owned by Myanmar women. It is more difficult to get capital for process innovation than to get capital for product innovation. In general, capital amount needed for process innovation is larger than the amount needed for product innovation. For process innovation, in some cases, technology advancement may be needed, and some installations to change methods would be needed.

In Myanmar, old firms may have more capabilities to innovate products and as well as processes. However, it is not sure because innovation may be more successful in young firms. Young firms are established during the time of information technology advancing and with the reasons to cope with emerging opportunities in market. There is no evidence to conclude that innovation is resulted from firm's experience. In this study, to analyse the relationship between firm's age and innovation, data for firm's age are collected. The data collected are already shown in Table (4.1).

4.4 Analysis on Innovation

Innovation is approached with two aspects such as types and newness level. In this study, the most common types of innovation – product innovation and process innovation – are explored with newness level according to conceptual definitions of innovation as mentioned in Chapter (2). According to newness level identification, each type of innovation consists of two categories – new to market and significantly improved on existing in market. Thus, there are four (two of product innovation and two of process innovation) categories.

In this study, innovation of SMEs owned by Myanmar women is evaluated by types of businesses and by types of innovation and by newness level of innovation. The results are shown in Table (4.11).

Table(4.11) Innovation by Types of Businesses

Types of Business	Number of Firms					Total
	Product & Process New Innovation	Product New & Process Significantly Improved	Process New & Product Significantly Improved	Product & Process Significantly Improved	No Innovation	
Food and Beverages	3	4	1	1	-	9
Garment				5	2	7
Cane-wear			2			2
Foot-wear		3			3	6
Retail	1					1
Myanmar Handicraft	3			2		5
Jewellery and Gold Smith	1	2	2	3		8
Health and Beauty Service			2		2	4
Healthcare	2				1	3
Construction			3			3
Tourism	2				2	4
Hotel					2	2
Boutiques	2		1	4	2	9
Furniture		1				1
Movie Production		1				1
Traditional Medicine		3	3			6
Event Management Service	4					4
Social Enterprise	2					2
Education Service				3		3
Total	**20**	**14**	**14**	**18**	**14**	**80**

Source: Survey Data, 2017

As shown in Table (4.11), there are 66 innovative firms and 14 non-innovative firms are included in survey. From this descriptive analysis, it is found that most of the surveyed women-entrepreneurs in food and beverages industry, and jewellery and gold smith industry are more innovative than women business-owners who are running businesses in other industries. For any SMEs owned by Myanmar women, product innovation will be preceding the process innovation or vise-visa. One cannot be emerged without supporting of preceding one. In some SMEs owned by Myanmar women, to launch new product, entrepreneurs only need to use process which is significantly improved on existing process. However, in some cases, to create new product, totally new process is needed to practice. From survey, it is also found that existing process must be replaced with totally new process to innovate product which is significantly improved on existing product. However, sometimes it is not necessary to use totally new process for improving existing product. Improving existing process is enough to improve the existing product.

4.5 Analysis on Effect of Personal Factors on Product Innovation

In this study, the stepwise regression analysis is applied to test the effect of personal factors on innovation. Innovation is the dependent variable and the personal factors are independent variables. Product innovation can be classified as product innovation which is new to the market and product innovation which is significantly improved on existing product. At first, this analysis started with testing the effect of personal factors on product innovation which is new to the market.

All the data types and sample size are consistent with the assumptions of multiple linear regression statistics. As mentioned in Chapter (3), there are six assumptions of multiple linear regression analysis.

The first assumption of Multiple Regression is that the relationship between independent variables and dependent variable can be characterized by a straight line. In this analysis, this assumption is tested by reviewing the normal probability plot. According to the output for normal probability plot, the relationship between personal factors and product innovation (new) can be characterized by a straight line (See Appendix of Regression Output).

Assumption 2 is that “there is no multicollinearity in data”. This assumption is to test that the independent variables are not too highly correlated. For the assumption to be met (no multicollinearity in independent variables), VIFs scores to be well below 10, and tolerance scores to be above 0.2.All these criteria are covered in this analysis.

Assumption 3 is that “the values of the residuals are independent”. Durbin-Watson statistic can be checked. In this analysis, this value is 1.750, sample size is 80, and number of variables is 6. Thus, the assumption-3 is met.

Assumption 4 is that “the variance of the residuals is constant”. This assumption (assumption of homoscedasticity) is the assumption that variation in the residuals (or amount of error in the model) is similar at each point of the model. In this analysis, the scatter plot is not in funnel shape. Thus, this assumption is also met.

Assumption 5 is that “the values of the residuals are normally distributed”. This assumption can be tested by probability plot. The closer the dots lie to the diagonal line, the closer to normal the residuals are distributed. In this analysis, residuals are normally distributed (See Appendix of Regression Output).

Assumption 6 is that “there are no influential cases biasing the model”. This assumption can be tested by looking at the Cook’s distance values. All values are not over 1. Thus, this assumption is met.

Since all assumptions are met, the test is continued to analyze the relationship between personal factors and product innovation which is new to market. This analysis is to test the Hypotheses (1).

Hypothesis 1 (a): In SMEs owned by Myanmar women, personal factors of creativity and future orientation have positive effect on product innovation which is new to the market.

The results for the effect of personal factors on product/service innovation which is new to the market are shown in Table (4.12).

Table (4.12) Effect of Personal Factors on Product Innovation (New)

Personal Factors	**Coefficients**	**Beta**	**T**	**Sig.**	**VIF**
(Constant)	4.574		2.558	0.013	
Creativity	0.940***	0.535	5.253	0.000	1.230
Future Orientation	0.693***	0.191	1.984	0.002	1.102
R	0.621				
R Square	0.385				
Adjusted R Square	0.335				
Durbin-Watson	1.750				
F statistics	101.625***			0.000	

Source: Survey Data, 2017

Note: ***, **, * Statistically significant at 1%, 5%, 10% level respectively.

As shown in Table (4.12), as a result of stepwise regression analysis is applied which can be interpreted as follows R^2 is 0.385 which indicates 38.5 percent of the variance in product innovation new can be explained two independent variables: creativity and future orientation. Adjusted R^2 is 0.335. The F statistics is 101.625 and it significant level is at 1 percent (P-value =0.000). The multicollinearity statistics by using variance inflation factors (VIF) are also checked. All variance inflation factors of predictor variables are less than 10. Durbin-Watson statistics are used to checked autocorrelation in the table. For 80 observation and six independent variables d_l is 1.338 and d_u is 1.653 at the 1 percent significant level. The Durbin –Waston value *(d)* 1.750 is greater than 1.653. It indicates that it appears to be no autocorrelation. Therefore, it can confirm that there are no autocorrelation and no multicollinearity problems in this table.

It is found that creativity and future orientation traits have positive effect on innovation both 1 percent significant level. Thus, it can be concluded that creativity and future orientation of women business-owners have an effect on their product innovation which is new to their market. To innovate new product, generally creativity is necessary. Moreover, women business-owners also need to be good at forecasting the potential trends and planning to cope with emerging opportunities, and to overcome new challenges. On the other hand, future orientation trait supports to

new product innovation. In SMEs owned by Myanmar women, creativity thinking and future orientation lead to new product innovation. According to the result shown in Table (4.12), the hypothesis 1(a) is accepted.

In this study, the personal factors which have positive effect on product innovation which is new to the market may not be the same as the factors have effect on product innovation which is significantly improved on existed product in market. Therefore, stepwise regression analysis is conducted to test the effect of personal factors and product innovation which is significantly improved on existing product in the market. This analysis is to test:

Hypothesis 1(b): In SMEs owned by Myanmar women, personal factors of owner's flexibility have positive effect on product innovation which is significantly improved on existing product in the market.

The results for the effect of personal factors on product innovation which is significantly improved on existing product/service are shown in Table (4.13).

Table (4.13) Effect of Personal Factors on Product Innovation (Improved)

Personal Factors	Coefficients	Beta	T	Sig.	VIF
(Constant)	1.656		1.220	0.226	
Flexibility	0.577***	0.498	2.959	0.004	1.284
R	0.663				
R Square	0.449				
Adjusted R Square	0.430				
Durbin-Watson	2.030				
F statistics	23.93***			0.000	

Source: Survey Data, 2017

Note: ***, **, * Statistically significant at 1%, 5%, 10% level respectively.

As shown in table (4.13), as a result of stepwise regression analysis is applied which can be interpreted as follows R^2 is 0.449 which indicates 44.9 percent of the variance in product innovation improved can be explained one independent variable: flexibility. Adjusted R^2 is 0.430. The F statistics is 23.93 and it significant level is at 1percent (P-value = 0.000). The multicollinearity statistics by using variance inflation

factors (VIF) are also checked. All variance inflation factors of predictor variables are less than 10. Durbin-Watson statistics are used to checked autocorrelation in the table. For 80 observation and six independent variables d_l is 1.338 and d_u is 1.653 at the 1 percent significant level. The Durbin –Waston value *(d)* 2.030 is greater than 1.653. It indicates that it appears to be no autocorrelation. Therefore, it can confirm that there are no autocorrelation and no multicollinearity problems in this table.

It is found that flexibility have a positive effect on innovation at 1percent significant level. Therefore, it can be concluded that there is an effect of flexibility on women business-owners' product innovation which is significantly improved on existing product in the market. In Myanmar, women business-owners must be flexible and used innovative methods to upgrade existing products. According to the results from analysis, Hypothesis 1(b) is accepted.

4.6 Analysis on Effect of Organizational Factors on Product Innovation

In this study, the stepwise regression analysis is applied to test the effect of organizational factors on innovation. Innovation is the dependent variable and the organizational factors are independent variables. Since the four categories of innovation are approached, the effect of personal factors on each of these four types of innovation is analyzed. Product innovation can be classified as product innovation which is new to the market and product innovation which is not new but significantly improved on existing product. At first, this analysis started with testing the effect of organizational factors on product innovation which is new to the market.

Before testing the effect of organizational factors on product innovation which is new to the market, the typical six assumptions of multiple linear regression are checked. All the data types and sample size are consistent with the assumptions of multiple linear regression statistics. This analysis is to test:

Hypothesis 2 (a): In SMEs owned by Myanmar women, organizational factors of firm's age and availability of capital have positive effect on product innovation which is new to the market.

The results for the effect of organizational factors on product innovation which is new to the market are shown in Table (4.14).

Table (4.14) Effect of Organizational Factors on Product Innovation (New)

Organizational Factors	Coefficients	Beta	t	Sig.	VIF
(Constant)	0.876		0.211	0.755	
Firm age	0.054*	0.201	1.805	0.075	1.029
Availability of Capital	0.538*	0.339	1.870	0.065	2.734
R	0.516				
R Square	0.400				
Adjusted R Square	0.252				
Durbin-Watson	1.757				
F statistics	11.181			0.000	

Source: Survey Data, 2017

Note ***, **, * Statistically significant at 1%, 5%, 10% level respectively

As shown in table (4.14), as a result of stepwise regression analysis is applied which can be interpreted as follows R^2 is 0.400 which indicates 40.0 percent of the variance in product innovation new can be explained two independent variables: firm age and availability of capital. Adjusted R^2 is 0.252. The F statistics is 11.181 and it significant level is at 1% (P-value = 0.000). The multicollinearity statistics by using variance inflation factors (VIF) are also checked. All variance inflation factors of predictor variables are less than 10. Durbin-Watson statistics are used to checked autocorrelation in the table. For 80 observation and six independent variables d_l is 1.390 and d_u is 1.595 at the 1 percent significant level. The Durbin-Waston value *(d)* 1.757 is greater than 1.595. It indicates that it appears to be no autocorrelation. Therefore, it can confirm that there are no autocorrelation and no multicollinearity problems in this table.

According to the analysis result, there is a significant positive effect of firm's age and availability of capital on product innovation which is new to the market both at 10 percent significant level. In Myanmar, SMEs owned by Myanmar women business-owners should have capital availability for innovation and business should also be aged enough for product innovation new to the market. According to the result, hypothesis 1(b) is accepted.

In this study, the effect of organizational factors on product innovation which is significantly improved on existing product of current market is also examined. This analysis is to test:

Hypothesis 2 (b): In SMEs owned by Myanmar women, organizational factors such as firm's age and information source have positive affecting on product innovation which is significantly improved on existing products in the market.

The results for the effect of organizational factors on product innovation which is significantly improved on existing product of the market are shown in Table (4.15).

Table (4.15) Effect of Organizational Factors and Product innovation (Improved)

Organizational Factors	Coefficients	Beta	T	Sig.	VIF
(Constant)	0.876		1.305	0.000	
Firm's Age	0.092***	0.317	3.175	0.002	1.029
Information Source	0.384**	0.214	2.160	0.034	1.011
R	0.525				
R Square	0.275				
Adjusted R Square	0.236				
Durbin-Watson	1.764				
F statistics	13.968***			0.000	

Source: Survey Data, 2017

Note ***, **, * Statistically significant at 1%, 5%, 10% level respectively.

As shown in table (4.15), As a result of stepwise regression analysis which can be interpreted as follows R^2 is 0.275 which indicates 27.5 percent of the variance in product innovation improved can be explained two independent variables: firm's age and information source. Adjusted R^2 is 0.314. The F statistics is 13.968 and it significant level is at 1% (P-value = 0.000). The multicollinearity statistics by using variance inflation factors (VIF) are also checked. All variance inflation factors of predictor variables are less than 10. Durbin-Watson statistics are used to checked autocorrelation in the table. For 80 observation and six independent variables d_l is 1.390 and d_u is 1.595 at the 1 percent significant level. The Durbin-Waston value *(d)*

1.764 is greater than 1.595. It indicates that it appears to be no autocorrelation. Therefore, it can confirm that there are no autocorrelation and multicollinearity problems.

It is found that firm's age and information source have positive effect on innovation at 1 percent and 5 percent significant level respectively. Thus, it can be concluded that firm's age of women business-owners have an effect on their product innovation which is significantly improved on existing product. In Myanmar, SMEs should have long-time experience in industry to launch innovative product which is significantly improved on existed product of market. However, age alone will not be effective for significantly improved product innovation. Information sources both in-house and outside are also very supportive to launch innovative product. According to result hypothesis 2(b) is accepted.

4.7 Analysis on Effect of Personal Factors on Process Innovation

In this study, process innovation can be classified as process innovation which is new to the industry and process innovation which is not new but significantly improved on existing in industry. At first, this analysis started with testing the effect of personal factors on process innovation which is new to the industry. This analysis is to test:

Hypothesis 3 (a): In SMEs owned by Myanmar women, personal factors of owner's creativity have positive effect on process innovation which is new to the industry.

The results for the effect of personal factors on process innovation which is new to the industry are shown in Table (4.16).

Table (4.16) Effect of Personal Factors on Process Innovation (New)

Personal Factors	Coefficients	Beta	t	Sig.	VIF
(Constant)	1.281		1.705	0.092	
Creativity	0.606***	0.316	2.945	0.004	1.230
R	0.625				
R Square	0.390				
Adjusted R Square	0.374				
Durbin-Watson	1.831				
F statistics	8.673***			0.000	

Source: Survey Data, 2017

Note***, **, * Statistically significant at 1%, 5%, 10% level respectively.

As shown in table (4.16), as a result of stepwise regression analysis is applied which can be interpreted as follows R^2 is 0.390 which indicates 39.0 percent of the variance in process innovation new can be explained one independent variable: creativity. Adjusted R^2 is 0.374. The F statistics is 8.673 and it significant level is at 1 percent (P-value = 0.000). The multicollinearity statistics by using variance inflation factors (VIF) are also checked. All variance inflation factors of predictor variables are less than 10. Durbin-Watson statistics are used to checked autocorrelation in the table. For 80 observation and six independent variables d_l is 1.338 and d_u is 1.653 at the 1 percent significant level. The Durbin –Waston value *(d)* 1.831 is greater than 1.653. It indicates that it appears to be no autocorrelation. Therefore, it can confirm that there are no autocorrelation and no multicollinearity problems.

It is found that creative has a positive effect on innovation at 1 percent significant level. It can be concluded that there is an effect of creativity of women business-owners on their process innovation which is new to their industry. To use new process, women business-owners must be creative to response the changes of technologies in business environment. Thus, Hypothesis 3 (a) is accepted.

In this study, the effect of personal factors on process innovation which is significantly improved on existing process industry is also analyzed. This analysis is to test:

Hypothesis3(b): In SMEs owned by Myanmar women, personal factors of owner's creativity and flexibility have positive effect on process innovation which is significantly improved on existing process in industry.

The results of effect of personal factors on process innovation improved are shown in Table (4.17).

Table (4.17) Effect of Personal Factors on Process Innovation (Improved)

Personal Factors	Coefficients	Beta	t	Sig.	VIF
(Constant)	0.562		0.211	0.833	
Creativity	0.528**	0.233	1.987	0.051	1.230
Flexibility	0.418*	0.210	1.753	0.084	1.284
R	0.626				
R Square	0.481				
Adjusted R Square	0.314				
Durbin-Watson	1.938				
F statistics	9.264***			0.000	

Source: Survey Data, 2017

Note***, **, * Statistically significant at 1%, 5%, 10% level respectively.

As shown in table (4.17), as a result of stepwise regression analysis is applied which can be interpreted as follows R^2 is 0.481 which indicates 48.1 percent of the variance in process innovation improved can be explained two independent variables: creativity and flexibility. Adjusted R^2 is 0.314. The F statistics is 9.264 and it significant level is at 1% (P- value = 0.000). The multicollinearity statistics by using variance inflation factors (VIF) are also checked. All variance inflation factors of predictor variables are less than 10. Durbin-Watson statistics are used to checked autocorrelation in the table. For 80 observation and six independent variables d_l is 1.338 and d_u is 1.653 at the 1 percent significant level. The Durbin-Waston value *(d)* 1.938 is greater than 1.653. It indicates that it appears to be no autocorrelation. Therefore, it can confirm that there are no autocorrelation and multicollinearity problems.

According to the analysis results, there is a significant effect of creativity and flexibility on process innovation which is significantly improved on existing process in the industry at 5 percent and 10 percent significant level respectively. Therefore, the two personal factors such as creativity and flexibility have an effect on process innovation which is significantly improved on existing process of industry. Thus, hypothesis 4(a) is accepted.

4.8 Analysis on Effect of Organizational Factors on Process Innovation

In this study, the stepwise regression analysis is applied to test the effect of organizational factors on process innovation. Process innovation is grouped into two: process innovation which is new to the industry, and process innovation which is significantly improved on existed process in the industry. At first, the effect of organizational factors on process innovation which is new to the industry is analyzed. This analysis is to test:

Hypothesis 4 (a): In SMEs owned by Myanmar women, organizational factors of firm's age and availability of capital have positive effect on process innovation which is new to the industry.

The results for the effect of organizational factors on process innovation which is new to the industry are shown in Table (4.18).

Table (4.18) Effect of Organizational Factors on Process Innovation (New)

Organizational Factors	Coefficients	Beta	t	Sig.	VIF
(Constant)	0.943		0.928	0.357	
Firm's Age	0.078**	0.326	2.561	0.012	1.029
Availability of Capital	0.664**	0.052	2.271	0.026	2.734
R	0.527				
R Square	0.278				
Adjusted R Square	0.240				
Durbin-Watson	1.627				
F statistics	12.87***			0.000	

Source: Survey Data, 2017

Note ***, **, * Statistically significant at 1%, 5%, 10% level respectively.

As shown in Table (4.18), as a result of stepwise regression analysis is applied which can be interpreted as follows R^2 is 0.278 which indicates 27.8 percent of the variance in product innovation new can be explained two independent variables: firm's age and Availability of capital. Adjusted R^2 is 0.240 The F statistics is 12.87 and it significant level is at 1% (P-value = 0.000). The multicollinearity statistics by using variance inflation factors (VIF) are also checked. All variance inflation factors of predictor variables are less than 10. Durbin-Watson statistics are

used to checked autocorrelation in the table. For 80 observation and four independent variables d_l is 1.390 and d_u is 1.595 at the 1 percent significant level. The Durbin-Waston value *(d)* 1.627 is greater than 1.595. It indicates that it appears to be no autocorrelation. Therefore, it can confirm that there are no autocorrelation and multicollinearity problems.

According to the analysis results, it is found that firm's age and availability of capital have the positive effect on innovation both at 5 percent significant level. Therefore, it can be concluded that firm's age and availability of capital of women business-owners have an effect on their process innovation which is new to the industry. In Myanmar, SMEs should have long time experience in industry to practice innovative process which is new to the industry. Moreover, availability of capital is also supporting to innovation. As a result, hypothesis 4(a) is accepted.

In this study, the effect of organizational factors on process innovation which is significantly improved on existing process in industry is also analyzed. This analysis is to test:

Hypotheses 4 (b): In SMEs owned by Myanmar women, organizational factors of firm's age and availability of capital have positive effect on process innovation which is significantly improved over existing process in industry.

The results for the effect of organizational factors on process innovation which is significantly improved on the process existing in the industry are shown in Table (4.19).

Table (4.19) Effect of Organizational Factors on Process Innovation (Improved)

Organizational Factors	Coefficients	Beta	t	Sig.	VIF
(Constant)	0.305		0.314	0.755	
Firm's Age	0.054***	0.201	1.805	0.003	1.029
Information Source	0.538**	0.339	1.870	0.060	2.734
R	0.626				
R Square	0.392				
Adjusted R Square	0.375				
Durbin-Watson	1.896				
F statistics	44.967***			0.000	

Source: Survey Data, 2017

Note ***, **, * Statistically significant at 1%, 5%, 10% level respectively.

As shown in table (4.19), as a result of stepwise regression is applied which can be interpreted as follows R^2 is 0.392 which indicates 39.2 percent of the variance in process innovation improved can be explained two independent variables: firm's age and Availability of capital. Adjusted R^2 is 0.375. The F statistics is 44.967 and it significant level is at 1% (P-value = 0.000). The multicollinearity statistics by using variance inflation factors (VIF) are also checked. All variance inflation factors of predictor variables are less than 10. Durbin-Watson statistics are used to checked autocorrelation in the table. For 80 observation and four independent variables d_l is 1.390 and d_u is 1.595 at the 1 percent significant level. The Durbin-Waston value *(d)* 1.896 is greater than 1.595. It indicates that it appears to be no autocorrelation. Therefore, it can confirm that there are no autocorrelation and multicollinearity problems.

It is found that firm's age and information source have positive effect on process innovation which is significantly improved on existing in the industry at 1 percent and 10 percent significant level respectively. Thus, it can be concluded that firm's age of women business-owners effect on their process innovation which is significantly improved on existing process in industry. In Myanmar, SMEs should have long -time experience in industry to practice innovative process which is new to the industry. Moreover, information source is also supporting to such innovation. According to the results, hypothesis 4(b) is accepted.

4.9 Analyze on Effect of Education on Innovation

In this study, the effect of women business-owners' education on innovation is also analysed. In survey, in questionnaires, Yes/No type question included for evaluation on having business related education or not. Thus, two sample t-test is applied to analyse the effect of business education on innovation. To apply this model, the following hypotheses are developed:

H_0: There is no difference between innovation of women business-owners who have business related education and innovation of ones who do not have business related education.

H1: There is difference between innovation of women business-owners who have business related education and innovation of ones who do not have business related education.

Test results are shown in Table (4.20).

Table (4.20) Effect of Education on Innovation

Type of Innovation	Leven's Test		t test for Equality of Mean		
	F	Sig	t	Sig	Mean Difference
Production innovation (New)	0.686	0.410	-0.285	0.650	-0.054
Product innovation (Significantly Improved)	0.179	0.673	-1.576	0.440	-0.334
Process Innovation(New)	0.553	0.459	0.000	1.000	0.000
Process Innovation (Significantly Improved)	0.504	0.480	-1.923	0.620	-0.473

Source: Survey Data, 2017

As shown in Table (4.20), the p value of the Leven's Test for equality of variance for all four categories of innovation are more than 0.05 (5% level of Significant). Therefore, null hypothesis (i.e the variance of two groups are equal) is not rejected due to significant values which are more than 0.05. Hence, the assumption of equality of variance is met for all four categories of innovation. Thus, the student "t" test is also used to examine the effect of effect of education on innovation. According to the t value, there is no difference education. Since null hypothesis is rejected due to significant value which are greater than 0.05 for all four categories of innovation. Thus, there is no difference between innovation and degree of women business-owners who do not have business related education.

4.10 Analysis on Effect of Innovation on Financial Performance

In this study, performance of SMEs owned by Myanmar women is measured with sales, profit, and observed effect. Sales are measured with percentage increase or decrease during recent three years (2014 to 2017). Similarly, profit is measured with

increase or decrease percentage during 2014 and 2017. For observed effect, perception of owners is assessed with Likert type five-point scale. The six items are considered: 3 items are related to improvement due to innovation and another 3 items are related to reducing effect due to innovation. The three improvements are increase in range of goods or services, expansion of external market or increase in market share, and improved quality of goods or services. The three reductions are reduced labour cost per unit of output, reduced materials and energy per unit output, and reduced environmental impact or improved health and safety.

Classification of innovation is approached from newness level. For product innovation, two types are considered by newness level: new to the market and significantly improved on already existed product/service. Similarly, for process innovation, two types such as new to the industry, and significantly improved on already existed in industry are identified. In this study, process innovation does not mean that innovation is originated from women business-owners. This new process may be created by outside suppliers. For process innovation which is significantly improved, this innovation may also be created by outside suppliers, and the firms' owners may be adaptors or users.

4.10.1 Analysis on Effect of Innovation on Sales

In this study, the effect of innovation on firm's performance by measuring with sales (increase or decrease percentage during recent three years) is analyzed. Stepwise regression method analysis is used to examine the effect of innovation on sales. Dependent variable is sales which data type is scale type. Independent variables are four types of innovation such as product innovation (new to the market), product innovation (significantly improved on existing in market), process innovation (new to the industry), and process innovation (significantly improved on existing in industry). For independent variables, data are collected by sales increase or decrease percentage during three years. This analysis is to test:

Hypotheses 5: Performance of SMEs measured by sales is affected by both product and process innovation.

The results of the effect of innovation on financial performance on sales are shown in Table (4.21).

Table (4.21) Effect of Innovation on Financial Performance (Sales)

Type of Innovation	Coefficients	Beta	t	Sig.	VIF
(Constant)	0.652		0.127	0.899	
Product Innovation (Significantly Improved on Existed Product in Market)	6.658***	0.255	2.121	0.003	1.360
Process Innovation (New to industry)	9.574***	0.202	2.740	0.002	1.360
R	0.447				
R Square	0.200				
Adjusted R Square	0.157				
Durbin-Watson	1.906				
F statistics	44.967***			0.000	

Source: Survey Data, 2017

Note***, **, * Statistically significant at 1%, 5%, 10% level respectively

As shown in table (4.21), as a result of stepwise regression analysis which can be interpreted as follows R^2 is 0.200 which indicates 20.0 percent of the variance in product sales can be explained two independent variables: production innovation improved and process innovation new to the industry. Adjusted R^2 is 0.157. The F statistics is 10.596 and it significant level is at 1% (P-value = 0.000). The multicollinearity statistics by using variance inflation factors (VIF) are also checked. All variance inflation factors of predictor variables are less than 10. Durbin-Watson statistics are used to checked autocorrelation in the table. For 80 observation and four independent variables d_l is 1.390 and d_u is 1.595 at the 1 percent significant level. The Durbin-Waston value *(d)* 1.906 is greater than 1.595. It indicates that it appears to be no autocorrelation. Therefore, it can confirm that there are no autocorrelation and multicollinearity problems.

According to the analysis result, it is found that there is a positive effect of product innovation significantly improved on existing product of market on sales of SMEs owned by Myanmar women at 1percent significant level. There is also a positive effect of process innovation which is new to the industry on sales of SMEs owned by Myanmar women at 1 percent significant level. Thus, SMEs owned by Myanmar women, sales can be increased by launching innovative products or services which are not totally new to the market, but which are significantly improved over

existing ones. By using or changing product manufacturing or services delivering processes which are new to the industry, sales can also be increased. According to the results, hypothesis (5) is accepted.

4.10.2 Analysis on Effect of Innovation on Profit

In this study, the analysis is effect of innovation on firm's performance by measure with profit (increase or decrease percentage during recent three years). Stepwise regression analysis is used to examine the effect of innovation on profit. Dependent variable is profit which data type is scale type. Independent variables are four types of innovation such as product innovation (new to the market), product innovation (significantly improved on existing in market), process innovation (new to the industry), and process innovation (significantly improved on existing in industry). For independent variables, data are collected by sales increase or decrease percentage during three years. This analysis is to test:

Hypothesis 6: Performance of SMEs measured by profit is affected by both product and product innovation.

The results of the effect of innovation on financial performance on profit are shown in Table (4.22).

Table (4.22) Effect of Innovation on Financial Performance (Profit)

Type of Innovation	Coefficients	Beta	t	Coefficients	VIF
(Constant)	0.652		3.937	0.000	
Process Innovation (New to the Market)	6.152**	0.217	1.781	0.027	1.360
Process Innovation (Significantly Improved on Existed Process in industry)	7.435**	0.297	2.395	0.019	1.415
R	0.429				
R Square	0.184				
Adjusted R Square	0.140				
Durbin-Watson	1.626				
F statistics	7.679***			0.000	

Source: Survey Data, 2017

Note***, **, * Statistically significant at 1%, 5%, 10% level respectively

As shown in table (4.22), as a result of stepwise regression analysis is applied which can be interpreted as follows R^2 is 0.184 which indicates 18.4 percent of the variance in profit can be explained two independent variables: process innovation new to industry and process innovation improved on existed the industry . Adjusted R^2 is 0.140. The F statistics is 7.679 and it significant level is at 1% (P-value = 0.000). The multicollinearity statistics by using variance inflation factors (VIF) are also checked. All variance inflation factors of predictor variables are less than 10. Durbin-Watson statistics are used to checked autocorrelation in the table. For 80 observation and two independent variables d_l is 1.390 and d_u is 1.595 at the 1 percent significant level. The Durbin-Waston value *(d)* 1.626 is greater than 1.595. It indicates that it appears to be no autocorrelation. Therefore, it can confirm that there are no autocorrelation and multicollinearity problems.

According to the result, both practice of using innovative process (new industry) to manufacture goods or to deliver service and practice of using innovative process (significantly improved over existing process industry) have positive effect on profit of SMEs owned by Myanmar women at 5 percent significant level. In SMEs owned by Myanmar women, process innovation which is new to the industry and process innovation significantly improved which is on existing process in the industry have an effect on profit of firms. Therefore, hypothesis (6) is accepted.

4.10.3 Analysis on Effect of Innovation on Non-Financial Performance

In this study, an effect of innovation on firm's non-financial performance is analysed by observed effect is also examined. The stepwise regression analysis is used to examine the effect of innovation on observed effect. Dependent variable is observed effect for which data are collected with Likert type five-point scale. Independent variables are four types of innovation such as product innovation (new to the market), product innovation (significantly improved on existing in market), process innovation (new to the industry), and process innovation (significantly improved on existing in industry). For independent variables, data are collected with the new products which are tested within their firms during three years.

In this study, observed effect is measured with two aspects: improved effect and reduction effect. Improvement effect is measured by increased in range of products/services, entered to new markets, and improved in quality of products/ services. Reduction effect is measured by deceased in labor cost, decreased in material cost, decreased in energy utilization and reduced in adverse consequences of environment, health and safety. At the first step, the improvement effect of innovation is analyzed. This analysis is to test:

Hypothesis7 (a): Performance of SMEs measured by improvement effect is affected by both product and process innovation.

According to the results of stepwise regression analysis, in SMEs owned by Myanmar women, product and process innovation of firms have not positive effect on improvement effect. Thus, hypothesis 7(a) is rejected.

The second step is analyzing the reduction effect from innovation. Although innovation cannot contribute to product range, market share and quality; innovation can contribute to cost reduction and also reduction in harmful effect on environment. Thus, the analysis is the effect of innovation on observed effect in reduction in cost and harmful effect on environment. This analysis is to test:

Hypothesis 7 (b): Performance of SMEs measured by reduction effect is affected by both product and process innovation.

The result of effect of innovation on non-financial performance is shown in Table (4.23).

Table (4.23) Effect of innovation on Non-Financial Performance

(Reduction Effect)

Type of Innovation	Coefficients	Beta	t	Coefficients	VIF
(Constant)	1.289		8.515	0.000	
Process Innovation (New to industry)	0.513***	0.299	2.817	0.006	1.360
Process Innovation (Significantly Improved on Existed Process in industry)	0.274**	0.250	2.359	0.021	1.415
R	0.435				
R Square	0.190				
Adjusted R Square	0.169				
Durbin-Watson	1.564				
F statistics	1.497***			0.000	

Source: Survey Data, 2017

Note***, **, * Statistically significant at 1%, 5%, 10% level respectively.

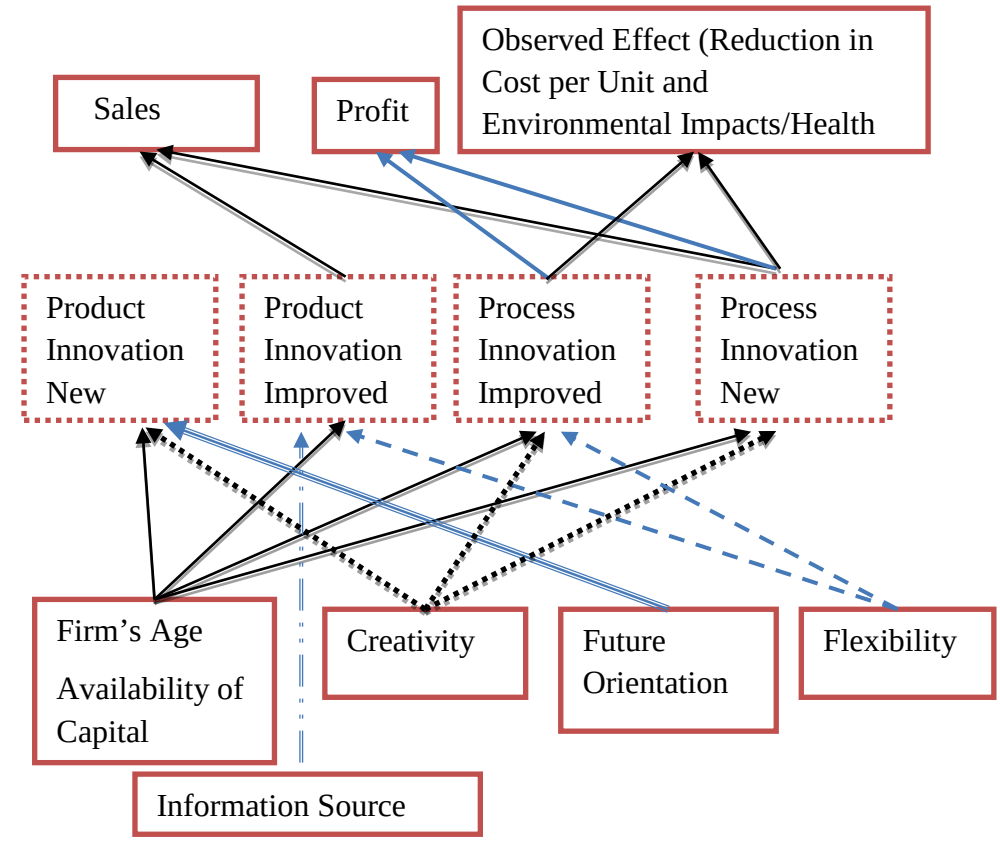
As shown in table (4.23), a result of stepwise regression analysis is applied which can be interpreted as follows R^2 is 0.190 which indicates 19.0 percent of the variance in non- financial performance (Reduction Effect) can be explained two independent variables: process innovation new to industry and process innovation significantly improved in industry . Adjusted R^2 is 0.169. The F statistics is 1.497 and it significant level is at 1percent (P- value = 0.000). The multicollinearity statistics by using variance inflation factors (VIF) are also checked. All variance inflation factors of predictor variables are less than 10. Durbin-Watson statistics are used to checked autocorrelation in the table. For 80 observation and four independent variables d_l is 1.390 and d_u is 1.595 at the 1 percent significant level. The Durbin-Waston value *(d)* 1.564 is greater than 1.595. It indicates that it appears to be no autocorrelation. Therefore, it can confirm that there are no autocorrelation and multicollinearity problems.

According to the analysis results, process innovation (new to industry), process innovation (significantly improved on existed process of industry) have positive impact on reduction effect (reducing in labour cost per unit output, reduction in material and energy cost per unit output, and reduction in negative effect on environment) at 1 percent and 5 percent significant level respectively. It can be concluded that SMEs owned by Myanmar women are using process innovation new and significantly improved processes for manufacturing goods and delivering services. By this way, they can reduce cost of production and services, and can also maintain sustainable environment. The reduction in cost and environment effect is resulted by process innovation which is significantly improved over existing process industry and process innovation which is totally new to industry. Therefore, hypothesis 7(b) is accepted.

4.11 Model Resulted from the Study

From analysis on survey data of 80 Myanmar women business-owners, some significant relationships can be proved. The model come out from this study is shown in Figure (4.1).

Figure (4.1) Personal Factors, Organizational Factors, Innovation, and Performance in SMEs Owned by Myanmar Women



Source: Survey Data, 2017

Effect of Fage and AVC on PIN, PII, PSIN, PSII
Effect of Information on PII
Effect of Creativity on PIN, PSIN, PSII
Effect of PII and PSIN on Sales
Effect of Future orientation on PIN
Effect of PSIN and PSII on Profit
Effect of Flexibility on PII and PSII
Effect of PSIN and PSII on Reduction Effect

As shown in model resulted from this study, the following points can be concluded:

(1) For product innovation which is new to the market; creativity, future orientation, firm's age and availability of capital should be strong.

(2) For product innovation which is significantly improved over existing product in market; flexibility of Myanmar women business-owners, availability of capital, and information sources are needed to be strong.

(3) To practice process innovation which is significantly improved over existing process in industry; creativity, flexibility, firm's age, and availability of capital are needed.

(4) To utilize innovative process which is new to the industry; creativity, firm's age and availability of capital are important.

(5) To increase sales, women SMEs owners are launching innovative products into market by practicing innovative product which is significantly improved and innovative process which is new to the industry.

(6) To increase profit, women SMEs-owners are emphasizing on process innovation-practicing either which is new processes or significantly improved processes.

(7) To reduce cost per output unit and to reduce adverse impact on environment, women SMEs-owners are practicing either which is new process or significantly improved processes.

Chapter (5)

Conclusion

In this chapter, firstly, findings from analysis on 80 women SMEs-owners are explained. Then, the implications for development of SMEs owned by Myanmar women are discussed. Finally, some recommendations, suggestions and need for further study are described by justifying to findings from analysis.

5.1 Findings and Discussions

This study mainly focuses on innovation, factors affecting innovation, and performance of SMEs owned by Myanmar women. The 80 randomly selected Myanmar women business-owners are surveyed. Factors affecting innovation are grouped into two: personal factors and organizational factors. The personal factors are creativity, flexibility, extroversion, future orientation, risk-taking, business-related education of owners and leadership. Organizational factors are market orientation, availability of capital, firm's age, and information source.

Innovation is classified as four types of innovation by counting the newness level. These four types of innovation are product innovation which is new to the market, product innovation which is significantly improved, process innovation which is new to the industry, and process innovation which is significantly improved over existed process in industry.

Firm's Performance is approached from three aspects. Thus, performance is measured with sales, profit, and observed effect. The observed effect can be measured from two aspects: improvement in product range and quality and in market, and reduction in cost and environmental impact.

Data are collected by personal interview method with structured questionnaire. To analyze data, stepwise regression analysis is applied. All assumptions of multiple

linear regression are checked before using this method. Surveyed data are also tested for reliability and validity. For validity, factor analysis is practiced.

From analysis on personal factors, it is found that creativity and future orientation have effect on product innovation which is new to the market, only flexibility is needed for product innovation which is significantly improved. For process innovation, creativity is needed for process innovation which is new to the industry. Creativity and flexibility are needed for process innovation which is significantly improved on existing process in the industry. However, owner's business related education has no effect on any type of innovation. From analysis on organizational factors, it is found that firm's age and availability of capital are affecting on all types of innovation. However, for product innovation which is significantly improved, information sources are also needed.

From analysis on effect of innovation on performance, it is found that sales of SMEs owned by Myanmar women can be increased if business-owners can launch innovative product totally new to their market by using innovative process which is innovatively upgraded based on existing process in industry. To increase profit, Myanmar women SMEs-owners are emphasizing on process innovation. To gain profit, some are using innovative processes totally new to industry while some are using processes which are significantly upgraded upon existing processes in industry. It is also found that Myanmar women SMEs-owners are paying more attention to reduce cost of production and to protect environment by practicing innovative processes which are new to the industry and significantly upgraded upon existing processes in industry.

Creativity is necessary to innovate new products. Moreover, women business-owners also need to be good at forecasting the potential trends and planning to cope with emerging opportunities, and to overcome new challenges. In other words, future orientation trait supports to new product innovation. Thus, in SMEs owned by Myanmar women, creative thinking and future orientation will lead to product innovation new to the market.

To launch innovative product which is not totally new, which is significantly improved on existing product, Myanmar women business-owners must be flexible to upgrade existing products by innovative methods. Thus, in SMEs owned by Myanmar

women; creativity, flexibility is important for product innovation which is significantly improved over existing ones.

To use new process, women business-owners must be creative to response to changes of factors including technology in business environment. To practice innovative process which is new to the industry, Myanmar women business-owners need creativity skills.

Myanmar women business-owners would not be able to innovate processes by themselves if the process is very new to the industry. Although they will not innovate new process, they would be able to practice innovative process which is significantly improved on existing process of industry. To do so, they need to be flexible to adapt to the specifications of new process, and they also need to be creative. To practice innovative process which is significantly improved on existing process in the industry. Thus, they must be creative and flexible. They also need to take risks to upgrade significantly the existing process.

To launch innovative product into market, SMEs owned by Myanmar women should have capital availability for innovation and businesses should also be aged enough. In Myanmar, to launch new product into market, SMEs should have long-time experience in industry.

In Myanmar, SMEs should have long-time experience in industry to launch innovative product which is not new, and which is significantly improved on existing product in the market. However, age alone will not be effective for significantly improved product innovation. Information sources both in-house and outside are also very supportive to launch innovative product which is significantly improved on existed product of market. It is not sure that age and information will lead to innovation. One important factor affecting innovation is availability of capital.

In Myanmar, SMEs should have long-time experience in industry to practice innovative process which is new to the industry. Moreover, availability of capital is also supporting to such innovation.

In this study, performance of SMEs owned by Myanmar women is measured with sales, profit, and observed effect. Sales are measured with percentage increase or decrease during recent three years (2014 to 2017). Similarly, profit is measured with increase or decrease percentage during 2014 and 2017. For observed effect,

perception of owners is assessed with Likert type five-point scale. The six items are considered: 3 items are related to improvement due to innovation and another 3 items are related to reduction due to innovation. The three improvements are increase in range of goods or services, expansion of external market or increase in market share, and improved quality of goods or services. The three reductions are reduced labour cost per unit of output, reduced materials and energy per unit output, and reduced environmental impact or improved health and safety.

Classification of innovation is approached from newness level. For product innovation, two types are considered by newness level: new to the market and significantly improved on already existed product/service. Similarly, for process innovation, two types are identified: new to the industry and significantly improved on already existed in industry. For new process innovation, in this study, process innovation does not mean that innovation is originated from women business-owners. Innovation means that the new process is used in firms, and this process is very new to firm's industry. This new process may be created by outside suppliers. For process innovation which is significantly improved, this innovation may be created by outside suppliers, the firms' owners may be adaptors or users.

In SMEs owned by Myanmar women, sales can be increased by launching innovative products or services which are not totally new, but which are significantly improved over existing ones, and also by using or changing product manufacturing or service delivering processes which are new to the industry.

Profit increase or decrease in SMEs owned by Myanmar women is affected by process innovation practiced in these firms. Both practice of using innovative process (new in industry) to manufacture goods or to deliver service and practice of using innovative process (significantly improved over existing process of industry) will positively affect on profit of SMEs owned by Myanmar women.

There is no significant an effect of innovation on observed effect of improvements in product range, market share, and quality of goods or services. Although innovation cannot contribute to product range, market share and quality; innovation can contribute to cost reduction and also reduction in harmful effect on environment.

From analysis, it is found that there is a positive effect of process innovation (significantly improved on existed process of industry and process innovation new to industry) on reduction effect (reduction in labour cost per unit output, reduction in material on energy cost per unit output, and reduction in negative effect on environment). SMEs owned by Myanmar women are using significantly improved processes to manufacture goods and to deliver services. By this way, they can reduce cost of production or cost of delivery service, and can also maintain sustainable environment.

5.2 Suggestions and Recommendations

The findings of this study suggest that Myanmar Women's creativity, flexibility, availability of capital, and firm's age have an effect on their innovation, consequently the firms which can generate product innovation which is new to market, and process innovation either totally new or significantly improved in market will gain more positive financial performance.

This study pointed out that Myanmar women SMEs-owners should try to enter into industry with new products resulted from novel ideas, then they should step up to become the innovators of new processes by investing money which are collected from start-up stage's sales.

To be innovative, Myanmar women SMEs-owners must be creative, and they must have new ways of looking at the markets and business environment. However, creativity alone would not be enough for successful innovation. Some women business-owners might have good ideas but these ideas are not feasible to be implemented because of not touching with market needs. They should not neglect the future trends and timing to cope with these trends in markets. Thus, for successful innovation and for commercialization, both creativity and future orientation are necessary. Moreover, they should consider the timing or their firms' maturity stages in markets so that they can choose relevant types of innovation and newness levels of innovation (product or process, new or improved) fitted to market needs and feasible to firm's capacity.

In some cases, women SMEs-owners are quite hesitating to change their current ways of manufacturing products or delivering services. They would like to

give priorities to creating new products instead of investing in new processes. Thus some women SMEs-owners are left behind of forward looking owners. Forward looking women SMEs-owners are moving fast to change processes when they gained sales and they can devote some amount for new processes. Thus, Myanmar women SMEs-owners should be flexible to innovate both product and process at the relevant times.

Although some women SMEs-owners are gaining success through innovation, there is still a lack of innovation in many businesses owned by Myanmar women due to many challenges. The significant challenge is difficulty for women owners of SMEs to get enough fund, especially at the start-up stage, for innovation. Many financial institutions including banks do not want to provide loans to women. Myanmar women generally cannot possess the titles of owning land. Thus, they have no collateral or other tangible resources, in addition, financial institution assumed that women's are weakness to generate operation and decision making. Thus, they want to avoid financial risk. In fact, the capacity to repay loans should not be largely evaluating with collateral, it should be evaluated with potentiality of commercialization in market. The innovativeness of SMEs should be more prioritized than the collateral.

Furthermore, this study could point out that, in SMEs owned by Myanmar women, the optimum way for gaining sale revenue is innovating significantly improved processes for introducing new products into market. From survey, it could be concluded that trying to innovate totally new process would not be effective to increase sales. Although customers are exciting to welcome the new products they have never seen in market, they will not be ready to accept products which are functionally and technologically complex to use in Myanmar. Thus, Myanmar women business-owners are tactfully trying to attract customers with new products which come out not from new processes, only from significantly improved processes, and their firms finally reach high sales targets. Moreover, they can reduce cost per unit of production by improving their production processes or service delivering processes.

Myanmar women business-owners could reduce energy cost, material cost and labour cost if they practiced to improve their production processes or their service delivering processes. By improving the existing processes, Myanmar women business-owners also protect environment from harmful effect of producing goods

and providing services. They can also protect health and safety of their work environment by updating their production processes. Since they are running small and medium-sized firms in Myanmar – developing country, it would not be easy for them to use highly advanced technology an new processes in respective industries. Thus, to gain sustainable competitive advantage in market, Myanmar women business-owners are persuading their target customers with new products, but they will not practice new processes.

Although new product innovation with improving processes could lead to high sales, it is not sure to gain high profit by doing so. Results from analysis of this study highlighted that high profit would come out from process innovation, not from product innovation. Myanmar women SMEs-owners would try to get market acceptance or market share by introducing new products produced with improved processes at the start-up stages of their firms. By this way, they would also try to reduce unit cost of production. Then, at the beginning of maturity stage of their products in markets, they would try for profitability. At this stage, their firms would be capable to emphasize more on process innovation because they already gained market share with introduction of new products. To get high profit, Myanmar women SMEs-owners would try to invest in new processes and also to improve existing processes. From this study, it is found that just trying to attract customers with products which are not new, and which are improved on existing products would not lead to sales as well as profit in SMEs owned by Myanmar women. This practice would not be effective for gaining sales and also for gaining profit. Moreover, it would not be useful to reduce cost per unit of production and also not be supportive to protect environment, and health and safety of employees.

As mentioned above, at the start up stage of SMEs owned by Myanmar women, they would emphasize on new product innovation and improvement on existing processes; and at the maturity stage of such new products, they would pay more attention to process innovation to change totally or to improve the existing processes. Thus, firm's age is influencing on new product innovation and also on process innovation and process improvement. Moreover, they also need to consider the availability of capital. At the start up stage, their initial capital would not be large enough to be pioneer of introducing new process into industry. However, at the maturity stage, they might accumulate the retained earnings from increasing sales and

market share. At this stage, they might be capable to invest in changing totally the existing processes. Thus, the availability of capital is also influencing on product innovation and also on process innovation. These two organizational factors would not lead to product and process innovation if entrepreneurs were not good at creative thinking and future orientation. They cannot innovate products or processes unless they have creative ideas. Moreover, women SMEs-owners would not consider any innovation if they are not initiative and they are not interested in future changes of markets and future needs of customers. Although product innovation could be resulted from personal factors of creativity and future orientation, process innovation would need owner's flexibility. To change the practice of existing process, owners need to be flexible to adapt to the new processes.

In addition, the findings of this study suggest that in Myanmar, the 51.7 percent are female in its population 50.4 million people. The 65.6 percent are within 15 to 64 years, economically productive population. Although World Bank Group Indicator, 2014 reported that 27 percent of firms are owned by women, DAFT report described that 20 percent of small firms are owned by women.

As Myanmar has been practicing the open market system and trying to economically integrate its economy with regional and international markets, the role of women and their contribution are highly important. While 82 percent of men are economically participating, 75 percent of women over 15 are participating (World Bank survey, 2014). Women in manufacturing are also critical in 2015-16 due to national export strategy of expanding the textile and garment industry. The proportion of women in workforce in Myanmar is largest in the world. At present, women are becoming entrepreneurs in tourism food and beverages, handicrafts, and retail, and very active in service firms such as communications, education, design, and healthcare.

Some women entrepreneurs prefer to stay small as they have other pressing priorities, balancing household and extra-household responsibilities, while others express a strong desire to grow into full-fledged sustainable business and finally formally registered firms. Political and social instability, including unremitting conflict in certain regions, means that sustainable growth of their businesses is not yet

a realistic option for many women. There is room for considerably more support for women to transition from informal business activity into the formal sector.[9]

In Myanmar, there are some business associations which are established for the development of SMEs owned by women. Myanmar Women Entrepreneurs Association (MWEA) was established in 1995, the MWEA is a strategic alliance of more than 1,600 businesswomen and women in academia that aims "to unite and bring into focus and world attention the role and capabilities of Myanmar women entrepreneurs."

MWEA engages foreign donors and possible investors and is experienced at managing grants for training and building capacity among its members. In addition, the association supports itself through member fees and by renting out space in its office to groups for meetings. MWEA supports microfinance loans for women, and also supporting to women business-owners by connecting their firms to market.

In addition to connecting women-owned enterprises to markets, the MWEA emphasizes entrepreneurial capacity-building. Beginning in 2012, MWEA channeled significant donor support into training and coaching its members, specifically focused on communication, finance, management, and reporting. A series of thematic conferences took place in Yangon in 2013, bringing together more than 550 entrepreneurs, leaders, and government officials. In addition, the MWEA aired at least ten radio programs to share knowledge with women entrepreneurs all over Myanmar.

ASEAN Women Entrepreneurs Network (AWEN) was established in 2014 and provides a venue for business women from throughout ASEAN to expand their networks and build new business contacts. It also engages in outreach to ASEAN and to national governments on women's economic empowerment issues. Myanmar is represented in AWEN by a leading member of Myanmar Women Entrepreneurs Association (MWEA).

[9] The Ecosystem for Women's Entrepreneurship in Myanmar: Networks, Associations, Organizations and Other Services that Support Women Entrepreneurs, March 2016. This publication was produced by Nathan Associates Inc. under Contract AID-486-C-13- 00004 for review by the United States Agency for International Development.

Although the business associations (as mentioned above) have been implementing many projects for development of businesses owned by Myanmar women, there is a lack of evidence to show the success of their businesses. Number of successful SMEs owned by Myanmar women is still small. In this study, sales of their firms can be increased by launching innovative products which are new to the market, and they also need to use innovative process which is significantly improved upon existing process of industry. For innovation which will lead to increase in sales, firm's age and availability of capital are necessary. Thus, Myanmar women owned SMEs should not be lived shortly.

Business owners and business associations should try for long lasting success of SMEs owned by Myanmar women. Business associations and government need to consider the firm's age to provide finance to launch new product into market. The finance receivers (women business owners) should use such finance majorly for new product launch, and they can use also for upgrading the process to manufacture goods or to deliver services. For giving loans or to provide finance, the owners' creative ideas and firm's age should be criteria instead of emphasizing only on collateral.

In Myanmar, although there are some associations of entrepreneurs, members have not yet systematically paid attention to innovation at firms. Thus, an association should be organized with innovative Myanmar women. This association can disseminate information about Myanmar innovative products to global market. This new form of association would stand for giving ideas, financial support, technology support, and so on to SMEs-owners if they have creative ideas.

In Myanmar, women SMEs owners could not spend large amount of money in promotion even though they have innovated very new products and services which can provide utility values for customers in various ways. Since they are not capable to communicate these values of their new products to potential customers, they cannot gain market acceptance. Thus, at the first stage, particularly for start-up SMEs owned by Myanmar women, government or non-government associations should consider the exemption of costs to them to participate in exhibitions and trade shows to show their products not only for local market but for export.

5.3 Needs for Further Research

This study focuses only on two types of innovation of SMEs owned by Myanmar. In theory, there are more than these two types of innovation: product and process. Although these two types are common in any industry, up to time and data availability, other types of innovation such as marketing innovation, supply chain innovation, business model innovation should also be focused in further research.

The scope of this study excludes the approach to newness level of innovation from radical and incremental view point. In this study, it is tested only from a approach of whether SMEs owned by Myanmar women are practicing either totally new to be launched or to improve existing ones. Thus, depending on focus area of research, especially in area of technological innovation, the radical and incremental newness level of innovation should be focused.

The personal factors relating to innovation is approached only from owners' side, not from employee side. In further study, the innovative behavior and attitude of employees should be considered. Employees' attitude and behavior would be crucial for innovation in some specific industries (e.g., in craftsmanship works).

In this study, it is assumed that the organizational factors such as firm's age, availability of capital, information source, and market orientation are relating to innovation in SMEs owned by Myanmar women. Other organizational factors such as types of businesses, ownership form, and cooperation with stakeholders are not included in this study. These factors would also influence on innovation. In further study, types of industry and size of firms should be studied, and the other organizational factors should be concerned.

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Appendix B

The Effect of Personal Factors on Product Innovation (New)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Creativity	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Future Orientation		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: PIN

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.828[a]	.686	.682	.463
2	.621[b]	.385	.335	.686

a. Predictors: (Constant), Creativity
b. Predictors: (Constant), Creativity, Future Orientation

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.639	1	36.639	170.628	.000[b]
	Residual	16.749	78	.215		
	Total	53.388	79			
2	Regression	32.528	2	16.264	101.625	.000[c]
	Residual	12.360	77	.160		
	Total	55.887	79			

a. Dependent Variable: PIN
b. Predictors: (Constant), Creativity
c. Predictors: (Constant), Creativity, Future Orientation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.739	.398		9.400	.000
	Creativity	1.423	.109	.828	13.062	.000
2	(Constant)	4.574	1.788		2.558	.013
	Creativity	.940	.179	.535	5.253	.000
	Future Orientation	.693	.349	.191	1.984	.002

a. Dependent Variable: PIN

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Extroversion	.047[b]	.732	.467	.083	.966
	Risktaking	.121[b]	1.786	.078	.199	.850
	Flexibility	.[b]	.	.	.	.000
	Futureorientation	-.025[b]	-.386	.700	-.044	.978
	Leadership	.052[b]	.813	.419	.092	.998
2	Extroversion	-.145[c]	-1.362	.177	.042	.745
	Risk taking	.007[c]	.062	.951	.091	.629
	Flexibility	.076[c]	.729	.468	.019	.779

a. Dependent Variable: PIN

b. Predictors in the Model: (Constant), Creativity

c. Predictors: (Constant), Creativity, Future Orientation

The Effect of Personal Factors on Product Innovation Significantly (Improved)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Flexibility	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: PISI

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.663[a]	.449	.430	.528

a. Predictors: (Constant), Flexibility

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.344	1	6.344	23.93	.000[b]
	Residual	20.643	78	.265		
	Total	26.987	79			

a. Dependent Variable: PISI

b. Predictors: (Constant), Flexibility

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.656	1.355		1.22	.226
	Flexibility	.577	.135	.498	2.959	.004

a. Dependent Variable: PISI

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Extroversion	.052b	.509	.612	.058	.966
	Risk taking	-.060b	-.554	.581	-.063	.850
	Creativity	.b				0.000
	Futureorientation	-.001b	-.013	.989	-.002	.978
	Leadership	-.003b	-.028	.978	-.003	.998

a. Dependent Variable: PISI

b. Predictors in the Model: (Constant), Flexibility

The Effect of Personal Factors on Process Innovation (New)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Creativity	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: PSIN

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.625[a]	.390	0.374	.87519

a. Predictors: (Constant), Creativity

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.643	1	6.643	8.673	.004[b]
	Residual	59.744	78	.766		
	Total	66.387	79			

a. Dependent Variable: PSIN

b. Predictors: (Constant), Creativity

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.281	.751		1.705	.092
	Creativity	.606	.206	.316	2.945	.004

a. Dependent Variable: PSIN

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Extroversion	.124[b]	1.133	.261	.128	.966
	Risktaking	.188[b]	1.634	.106	.183	.850
	Flexibility	.[b]	.	.	.	.000
	Futureorientation	.145[b]	1.340	.184	.151	.978
	Leadership	.100[b]	.926	.357	.105	.998

a. Dependent Variable: PSIN

b. Predictors in the Model: (Constant), Creativity

The Effect of Personal Factors on Process Innovation Significantly (Improved)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Creativity	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Flexibility	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: PSII

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.393[a]	.154	.144	1.05261
2	.626[b]	.481	.314	1.01809

a. Predictors: (Constant), Creativity

b. Predictors: (Constant), Creativity, Flexibility

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.777	1	15.777	14.239	.000[b]
	Residual	86.423	78	1.108		
	Total	102.200	79			
2	Regression	16.798	2	8.399	9.264	.000[c]
	Residual	69.811	77	.9066		
	Total	102.200	79			

a. Dependent Variable: PSII

b. Predictors: (Constant), Creativity

c. Predictors: (Constant), Creativity, Flexibility

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.259	1.438		2.961	.004
	Creativity	1.436	.380	.393	3.773	.000
2	(Constant)	.562	2.659		.211	.833
	Creativity	.528	.266	.233	1.987	.051
	Flexibility	.418	.238	.210	1.753	.084

a. Dependent Variable: PSII

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Risk Taking	.276[b]	2.526	.014	.277	.850
	Extroversion	.001[b]	.006	.995	.001	.791
	Flexibility	.276[b]	2.526	.014	.277	.850
	Futureorientation	.004[b]	.034	.973	.004	.970
	Leadership	.082[b]	.783	.436	.089	1.000
2	Extroversion	-.002[c]	-.014	.989	-.002	.791
	Risking taking	.[c]	.	.	.	.000
	Futureorientation	-.019[c]	-.187	.852	-.021	.963
	Leadership	.068[c]	.676	.501	.077	.997

a. Dependent Variable: PSII

b. Predictors: (Constant), Creativity

c. Predictors: (Constant), Creativity, Flexibility

The Effect of Organizational Factors on Product Innovation (new)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	FAge	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	AVC	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: PIN

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.481[a]	.231	.216	.76759
2	.516[b]	.400	.252	.81925

a. Predictors: (Constant), FAge

b. Predictors: (Constant), FAge, AVC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.848	1	8.848	23.469	.000[b]
	Residual	29.460	78	.377		
	Total	38.308	79			
2	Regression	9.979	2	4.989	11.181	.000[c]
	Residual	34.360	77	.4462		
	Total	102.200	79			

a. Dependent Variable: PIN

b. Predictors: (Constant), FAge

c. Predictors: (Constant), FAge, AVC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.597	.229		2.602	.012
	FAge	.129	.033	.481	3.875	.000
2	(Constant)	.305	.972		.314	.755
	FAge	.054	.030	.201	1.805	.075
	AVC	.538	.288	.339	1.870	.065

a. Dependent Variable: PIN

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	AVC	.207[b]	1.700	.095	.236	.995
	MKO	-.091[b]	-.726	.4714	-.103	.985
	INFS	.[b]	.	.	.	.
2	MKO	-.002[c]	-.014	.989	-.002	.791
	INFS	.[c]	.	.	.	.000

a. Dependent Variable: PIN

b. Predictors: (Constant), FAge

c. Predictors: (Constant), FAge, AVC

The Effect of Organizational Factors on Product Innovation Significantly (Improved)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	FAge	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	INFS	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: PISI

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.424[a]	.180	.164	.50850
2	.525[b]	.275	.236	.56625

a. Predictors: (Constant), FAge

b. Predictors: (Constant), FAge, InfS

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.841	1	2.841	17.218	.000[b]
	Residual	12.928	78	.165		
	Total	38.308	79			
2	Regression	16.798	2	8.339	13.968	.000[c]
	Residual	45.952	77	.597		
	Total	62.750	79			

a. Dependent Variable: PIN

b. Predictors: (Constant), FAge

c. Predictors: (Constant), FAge, InfS

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.100	.152		.659	.513
	FAge	.073	.022	.424	3.315	.002
2	(Constant)	.876	.671		1.305	.000
	FAge	.092	.021	.317	3.175	.002
	INFS	.384	.127	.214	2.160	.034

a. Dependent Variable: PISI

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	AVC	.095[b]	.734	.466	.104	.995
	MKO	.087[b]	.673	.504	.096	.985
	INFS	.[b]	.	.	.	.
2	MKO	.025[c]	014	.989	-.002	.791
	AVC	.[c]	.	.	.	.000

a. Dependent Variable: PIN

b. Predictors: (Constant), FAge

c. Predictors: (Constant), FAge, InfS

The Effect of Organizational Factors on Process Innovation (New)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	FAge	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	AVC	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: PSIN

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.414[a]	.171	.155	.86340
2	.527[b]	.278	.240	.82713

a. Predictors: (Constant), FAge

b. Predictors: (Constant), FAge, AVC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.708	1	7.708	16.16	.000[b]
	Residual	37.273	78	.477		
	Total	44.981	79			
2	Regression	11.380	2	5.69	12.87	.000[c]
	Residual	34.008	77	.442		
	Total	45.387				

a. Dependent Variable: PSIN

b. Predictors: (Constant), FAge

c. Predictors: (Constant), FAge, AVC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.246	.258		.951	.346
	FAge	.120	.037	.414	3.216	.002
2	(Constant)	.943	1.016		.928	.357
	FAge	.078	.031	.326	2.561	.012
	AVC	.664	.301	.052	2.271	.026

a. Dependent Variable: PSIN

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	AVC	.110[b]	.850	.400	.120	.995
	MKO	-.291[b]	-2.341	.023	-.317	.985
	INFS	.[b]	.	.	.	.000
2	MKO	.098[c]	.789	.434	.113	.994
	INFS	.[c]	.	.	.	.000

a. Dependent Variable: PSIN

b. Predictors in the Model: (Constant), FAge

c. Predictors in the Model: (Constant), FAge, AVC

The Effect of Organizational Factors on Process Innovation Significantly (Improved)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	FAge	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	AVC	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: PSIS

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.508[a]	.258	.244	1.0578
2	.626[b]	.392	.375	.566

a. Predictors: (Constant), FAge

b. Predictors: (Constant), FAge, AVC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.494	1	19.494	27.188	.000[b]
	Residual	55.949	78	.717		
	Total	44.981	79			
2	Regression	27.970	2	13.985	44.967	.000[c]
	Residual	24.018	77	.311		
	Total	51.987	79			

a. Dependent Variable: PSIS

b. Predictors: (Constant), FAge

c. Predictors: (Constant), FAge, AVC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.004	.316		.012	.990
	FAge	.191	.046	.508	4.174	.000
2	(Constant)	.305	.972		.314	.755
	FAge	.054	.030	.201	1.805	.003
	AVC	.538	.288	.339	1.870	.060

a. Dependent Variable: PSIS

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	AVC	.130[b]	1.069	.290	.151	.995
	MKO	-.051[b]	-.410	.684	-.058	.985
	INFS	.[b]	.	.	.	.000
2	MKO	.165[c]	.789	.434	.161	.994
	INFS	.[c]	.	.	.	.000

a. Dependent Variable: PSIN

b. Predictors in the Model: (Constant), FAge

c. Predictors in the Model: (Constant), FAge, AVC

The Effect of Innovation on Firm's Performance (sales)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	PISI	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	PSIN	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Sales

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.407[a]	.166	.155	22.36746
2	.447[b]	.200	.157	22.11456

a. Predictors: (Constant), PISI

b. Predictors: (Constant), PISI, PSIN

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7756.352	1	7756.352	15.503	.000[b]
	Residual	39023.65	78	500.303		
	Total	46780.00	79			
2	Regression	10101.612	2	5050.806	10.596	.000[c]
	Residual	36678.388	77	476.628		
	Total	46779.00	79			

a. Dependent Variable: sales

b. Predictors: (Constant), PISI

c. Predictors: (Constant), PISI, PSIN

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.475	4.995		.696	.489
	PISI	12.053	3.061	.407	3.937	.000
2	(Constant)	.652	5.143		.127	.899
	PISI	6.658	4.825	0.255	2.121	.003
	PSIN	9.974	3.494	0.202	2.74	.002

a. Dependent Variable: sales

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	PIN	.097[b]	.855	.395	.097	.839
	PSIN	.187[b]	1.734	.087	.194	.899
	PSII	.185[b]	1.673	.098	.187	.56
2	PIN	.025	.789	.078	.161	.856
	PSII	.[c]	.	.	.	.000

a. Dependent Variable: sales

b. Predictors in the Model: (Constant), PIN

c. Predictors in the Model: (Constant), PIN, PSII

The Effect of Innovation on Firm's Performance (Profit)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	PSIN	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	PSII	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Profit

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.406[a]	.166	.124	23.36746
2	.429[b]	.184	.140	22.11456

a. Predictors: (Constant), PSIN

b. Predictors: (Constant), PSIN, PSII

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7756.352	1	7756.352	15.503	.000[b]
	Residual	39023.65	78	500.303		
	Total	46780.00	79			
2	Regression	9653.827	2	4826.913	7.679	.000[c]
	Residual	48401.173	77	628.58		
	Total	58055.000	79			

a. Dependent Variable: sales

b. Predictors: (Constant), PSIN

c. Predictors: (Constant), PSIN, PSII

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.475	4.995		.696	.489
	PSIN	12.053	3.061	.407	3.937	.000
2	(Constant)	5.639	5.908		.954	.343
	PSIN	6.152	3.398	0.217	1.781	.027
	PSII	7.435	2.873	0.297	2.395	.019

a. Dependent Variable: sales

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	PIN	.097[b]	.855	.395	.097	.839
	PISI	.187[b]	1.734	.087	.194	.899
	PSII	.185[b]	1.673	.098	.187	.56
2	PISI	.025	.789	.078	.161	.856
	PIN	.[c]	.	.	.	.000

a. Dependent Variable: sales

b. Predictors in the Model: (Constant), PSIN

c. Predictors in the Model: (Constant), PSIN, PSII

The Effect of Innovation on Firm's Performance (Observed Effect)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	PSIN	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	PSII	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: OEM

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.362[a]	.131	.120	.94186
2	.435[b]	.190	.169	.91547

a. Predictors: (Constant), PSIN

b. Predictors: (Constant), PSIN, PSII

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.435	1	10.435	11.763	.001[b]
	Residual	69.195	78	.887		
	Total	79.630	79			
2	Regression	15.097	2	7.549	9.007	.000[c]
	Residual	64.532	77	.838		
	Total	79.630	79			

a. Dependent Variable: OEM

b. Predictors: (Constant), PSIN

c. Predictors: (Constant), PSIN, PSII

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.496	.127		11.821	.000
	PSIN	.622	.181	.362	3.430	.001
2	(Constant)	1.289	.151		8.515	.000
	PSIN	.513	.182	.299	2.817	.006
	PSII	.274	.116	.250	2.359	.021

a. Dependent Variable: OEM

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	PIN	.061[b]	.528	.599	.060	.839
	PISIN	.250[b]	2.359	.021	.260	.936
	PSII	.247[b]	2.230	.029	.246	.864
2	PSIN	-.003[c]	-.029	.977	-.003	.790
	PSII	.192[c]	1.701	.093	.191	.805

a. Dependent Variable: OEM

b. Predictors in the Model: (Constant), PSIN

c. Predictors in the Model: (Constant), PSIN, PSII